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## ORIGINAL LECTURES.

### CLINICAL LECTURE ON ARSENICAL PARALYSIS.

*Delivered at the Pennsylvania Hospital*

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Reported by FRANK WOODBURY, M.D.

GENTLEMEN,—The man whom you now see is a very different patient from the man who entered the hospital some time since. His condition has greatly changed for the better; indeed, even his features wear a different expression: so that while I am reading the clinical history you will be obliged to make a certain allowance in order to appreciate the application of the notes to the case before you. I mention this that you will understand that the comparison which you will thus make mentally between the case and the record may not suggest any exaggeration or misstatement in the record, kept since the date of his admission, September 13, 1880. While some of the features then existing are still obvious, others are at present too slight to yield any evidence in regard to the cause or form of disease from which he has suffered. The patient's name is Andrew B.; he is 19 years of age. When he entered the ward he was in such an unfavorable mental condition that it was impossible to gain from him any trustworthy history; indeed, the notes say that he was for a time completely out of his mind; but, partly from his own statements and chiefly from what could be gathered from his friends, we learned that he had had gonorrhœa, and that he also had contracted syphilis about a year before admission. This, however, had not been followed by secondary symptoms, and in the main he seems to have been a healthy person.

From his statements it also appeared that about three months before entering the hospital he began dosing himself with arsenic with a view of improving his appearance, having somewhere learned of this practice among the Styrian peasants. He commenced by taking "small pinches" of arsenic,—arsenious acid, I presume,—and, increasing the dose gradually, he got up to about three or four pinches in the twenty-four hours. This had been going on for three or four months before his present train of symptoms appeared. For the last ten days before he came here he had been complaining first of sore throat, and, later, of abdominal pain, vomiting, and diarrhœa; he also had headache, bleeding at the nose, some cough, and decided palpitation of the heart. Notice these symptoms. You will say, How like the beginning of typhoid fever! So they were; and, what makes the resemblance greater, on admission he was even delirious. His temperature was 102½° (axilla), his respiration 26, and the pulse 130 to the minute. Everything indicated a fever of low type,—fever, mental wandering, dry skin, prostration. But what arrested our attention at once was what is stated very specially in the note, "his face and legs were œdematous." His tongue was coated; we also found upon examination that he had a slight right-sided pneumonia and a moderate amount of erythematous eruption or roseola upon the chest and abdomen. The urine was examined the morning after admission, and found to be normal. He was kept quiet in bed, and placed on a diet consisting largely of milk; his medical treatment was an ordinary fever-mixture and effervescing draught, with a little lead and opium for his diarrhœa, which was soon controlled. He rapidly got better; but it was found on September 30, notwithstanding the evident improvement in his acute symptoms, that he could not stand upon his legs; his mind too, was not in a healthy condition.

Let us now glance over this history. Here is a man who comes into the hospital with fever, some pneumonia, diarrhœa, and in short, in many respects, the symptoms of typhoid fever. As he recovers it is found that he cannot stand up, his legs will not support him; but it is also found that he can move his legs, although with reduced force, when he is lying down. We subsequently learn from his brother that he had an epileptic convulsion on the day before he came in. Another important point that I want you to remember is that the sensibility was good, indeed it appeared exalted; and he complained of a sense of formication, and frequently of aching pains in the muscles. He was very sensitive to tickling, and near the ankle he had some numbness,—perhaps from pressure upon

his heels. In making the examinations he cried and complained so much when sensation was being tested that we were, after several efforts, obliged to content ourselves with the general result above stated. He had at that time frequent jerkings of the muscles of the legs, and powerful reflex movements were easily excited. With some reference doubtless to the syphilitic history (I was not in charge of the wards at that time), he was placed upon sirop Gibert, which you recognize as an antisyphilitic remedy, consisting principally of iodide of potassium and biniodide of mercury. I mention these points somewhat in detail in order that you may know what the symptoms were, and what was the treatment, the better to understand the subsequent course of the case. But very little change took place under this treatment: indeed, his nutrition became worse, he was emaciated, almost idiotic in mind, rambling, incoherent, having illusions which greatly annoyed him, and made him so noisy at night that he much disturbed the other patients; he was very irritable and whining often during the day.

It was in this condition that I saw him when I first took charge of the ward. He was in a curious mental state, which I may sum up as in the main hysterical; there was great fretfulness, with frequent exhibitions of temper, alternating with spells of crying; he had to be fed like a child; he was restless, slept poorly at night, and was unable to stand; he told us that he had some pains in the legs on motion.

Now, we tested the legs, and found that the soles of the feet were very sensitive to the touch, and reflex movements increased. There was absent patellar tendon reflex, but he complained a great deal when the tendon was struck. The nails of the toes were growing, although there was decided muscular atrophy in the thighs as well as in the legs. The electro-muscular contractility was not lost to the faradic current; the rectus and sartorius contracted, but it required a strong current to make them contract; the sensibility to the current was poor in the legs, but better in the thighs. Ordinary tactile sensibility was not impaired; it seemed, indeed, that there was a certain degree of hyperæsthesia. Although the muscles were wasted, they did not yield the reaction of degeneration. The atrophy was about equal on both sides, and the circumference over the largest portion of the calf was only nine inches. The arms were well developed. As you notice, his frame is rather large.

Gentlemen, I placed our patient upon very large doses of iodide of potassium, with the most marked result. He has grown fat, his appetite is good, he can feed himself now, and often asks for more; his mind is much better; indeed, he is quite rational. His eye-ground, examined with the ophthalmoscope, shows a great deal of active congestion, a neuro-retinitis, but no choking of the disk nor atrophic change in the optic nerve. He only has a slight headache occasionally. He has lost his curious peevishness and hysterical manifestations; he sleeps well at night. In every respect, mentally and physically, he has improved, and in his features markedly so.

But what about the legs? Their condition you see for yourselves. You notice a state of affairs that still exists, though to a less degree than a few months ago; they have dwindled. There has been, however, a gain of more than an inch in circumference under the treatment. Your attention is called to the curious position of the legs and feet: owing to paresis of the flexors the feet are very much extended, so as to be almost in a line with the legs. He moves the legs and kicks when requested, although feebly; you see that muscular power is still impaired, though when lying down, as he is now, there is more power than when he tries to stand, which he is still unable to do without assistance. I do not think that there was ever entire loss of muscular power, but he has certainly regained much of it, particularly within the last three or four weeks. Notice the nails, which are still growing; they have emerged now some distance and are claw-like. Notice also the capillary congestion of the skin around the joints, and its thin polished surface as though its nutrition were affected. Sensation in the soles of the feet is good, and a prick with a pin produces at once reflex movements: he jerks away the leg instantly. Sensation of the leg itself is good; in the thigh it is very good. Indeed, at one time, as I have already told you, he seemed to be over-sensitive to touch, but on account of his mental condition it was difficult to find out just what he felt, and I have some doubts about his sensation, as he complained very much when he was disturbed. We may conclude from our examination

that still there is incomplete loss of power, without impairment of sensibility, in both lower extremities.

You saw that with an ordinary faradic current there was no contraction of the recti muscles. But when we used a very strong current the recti contracted, and so did the sartorii; that was with the slowly-interrupted current,—with a perceptible interval between the shocks. With the usual current of moderate strength there was no action. Using the same strength of current in the muscles of the leg, good contraction is produced in the gastrocnemius; in the flexors, where there is the greatest loss of power, there is only the merest quiver of the muscle even with a very strong induced current. Very much the same state of things exists in the left leg as in the right: there is scarcely any appreciable difference. But even when no movement is produced the man says that he feels the current. To complete the examination, I will add that the grasp of the right hand is deficient; the left also has a feeble grasp, but not quite so feeble as the right. The skin of the hands is soft; they are perspiring a great deal. The muscles of the upper extremities now respond to the current, although at one time they did so very feebly. They have gained in electro-muscular contractility, though never has it been lost in them to the same degree as in the legs; they have decidedly gained in power of voluntary movement, for a few months ago, you remember, he was unable to feed himself. The nails here are growing too, just as in the lower limbs. There is at present no heart or lung complication; an anæmic murmur which formerly existed has passed away; the heart is rather irritable and quick, but presents none of the signs of disease. The temperature now is normal; the urine is normal. The temperature became normal soon after the acute symptoms of the first days of admission passed away, yet until quite lately there have been occasionally, and seemingly without cause, sudden rises to 101° or 102°, lasting for a day or two,—on one occasion for a week; the highest temperature reached in these irregular rises was 103.5°, on the 25th of October.

Now, what is the explanation and significance of these symptoms? Here we have one of those rare cases of marked paralysis following chronic arsenical poisoning. As the case is so rare, I propose, first, to make out a more definite diagnosis, determining what in my judgment this form of paralysis here present really is; and, secondly, I shall offer some general remarks upon paralysis following arsenic.

*What form of paralysis is this?* We can say truly that it has been chiefly a spinal paralysis. I do not mean to say that there were no brain-symptoms, but the form of the paralysis has been what we find especially in spinal lesions. It is, I think, a spinal palsy. Next let us consider what variety of spinal lesion exists. The parts involved in the paralysis are, as you have seen, the four extremities; the arms, as well as the legs, have been affected, though the legs have borne the brunt of the disease. We must, I think, locate the lesion high up in the cord, or we must admit that it is general and extends throughout its length. From a review of the examination, we are forced to the opinion that the disease is a diffused lesion rather than a local one. What structure of the cord has suffered the greatest injury? Here I must allude to the more minute knowledge of nerve-structure and spinal disorders and some of the finer points in nerve pathology to which attention has only been comparatively recently attracted by the investigations of Erb, Charcot, Althaus, Seguin, and others. There are forms of spinal paralysis pre-eminently marked by progressive muscular atrophy, defective nutrition, and defective electro-muscular contractility,—defective rather than entirely lost: indeed, it is maintained by Erb that when the muscles fail to respond to the induced current they may even act more promptly to the galvanic current and with a weaker current than in health. Paresis is marked, wasting of the limbs is marked, and nutritive changes in the skin are marked, while sensibility is preserved; and many of these symptoms, as in acute poliomyelitis, come on acutely with headache and fever, and the paralysis rapidly reaches its highest degree. The muscular wasting becomes very marked; so it is in the lateral amyotrophic sclerosis of Charcot; and the nutritive changes, in addition to the palsy, bespeak in either case, though from a different cause, a certain alteration, degenerative in character, in the ganglion-cells of the anterior horns of the gray matter of the cord, which have so powerful an influence on nutrition. Now, when you look at the clinical features of the case before us, you see how closely they re-

semble those of a spinal paralysis with involvement of the trophic spinal centres,—how in many respects they are like those of acute anterior poliomyelitis.

I think I have now proved to you what kind of paralysis it is, and what is the seat of the marked lesions of the spinal cord here produced by arsenical poisoning. You see that it is chiefly in the ganglion-cells of the anterior cornua, and, judging from the marked motor affection, we know that the disorder has also diffused itself over the anterior or antero-lateral columns. The nature of the lesion is, I think, irritative or inflammatory, attacking, very likely, connective tissue as well as nerve-tissue.

The case that I have been expounding to you is, I believe, an important one from the point of view that it will give us a rather more accurate insight into the nature of arsenical paralysis than we have hitherto possessed. That arsenic will produce palsies, that these may happen without marked cerebral symptoms, that in certain cases atrophy of the muscles occurs, has been long known, and you will find in medical literature a number of instances reported. But, while these establish this fact, they are mostly cases of old observers,—as in the group brought together by Christison,—and so placed on record as to be next to valueless from the point of view of the requirements of modern scientific diagnosis and pathology. Still, I think that any one who will take the trouble of analyzing the cases, as I have done with a number, will at least be struck with this point, which indeed I do not hesitate to formulize into a law,—that arsenical poisoning, whether partial or general, is pre-eminently, I may say almost invariably, a spinal paralysis. In some instances it seems to affect a special nerve-tract at its origin, but in most instances the lesion is more diffused.

Now, as to the part of the spinal cord particularly involved, it is not always the same. The observations brought together by Jaccoud in which violent and diffuse neuralgias are mentioned forbid us to doubt that the posterior roots of the spinal nerves are sometimes implicated. But, reviewing the whole field, I have been impressed with the frequent absence of sensory phenomena; and I believe I am right in affirming that the poison exerts its influence particularly on the anterior or antero-lateral columns. I will go still further. In analyzing the cases, I have been struck with the number of instances of muscular atrophy terminating in fair recoveries; and, placing these together and examining them in the light of our modern knowledge of spinal affections, and bringing them in connection with this most striking case that we have been studying, I affirm that frequently the great ganglion-cells of the anterior cornua are involved, producing lesions similar to those of anterior poliomyelitis.

As bearing upon the subject, I will mention that in some very interesting researches in the September number of the *Archives de Physiologie* for 1875 a Russian physician, Scolosuboff, alludes to paralysis with muscular atrophy having been met with by him a number of times in the chronic arsenical poisoning which he states to be very common in Russia. Unfortunately, he gives no particulars and no clinical data to elucidate the matter; but, from an experimental point of view, and as aiding us in understanding the mode in which arsenic acts on the nervous system, his researches are very valuable, and may, I think, be most advantageously made use of in our argument. In animals slowly poisoned with arsenic, even where paralysis was produced, arsenic was found only in very small quantities in the muscles, while it was detected in very large quantities in the spinal cord and in the brain,—in amounts not only much larger there than in the muscles, but also much larger than in the liver. In the most conclusive experiment cited, the proportion of arsenic was as 1 in muscle to 36.5 in brain and 37.3 in spinal cord. In the more acute instances of poisoning the arsenic was first found in considerable amounts in the brain, and subsequently it accumulated rapidly in the spinal cord. The nervous symptoms of arsenic-poisoning, including the paralysis, we may, then, fairly infer are due to the localization of the arsenic in the nervous centres. The delirium, the epileptic convulsions, the headache, of the earlier stages bespeak plainly the brain-affection; the palsy, which is generally double-sided and not an early symptom, shows the presence of arsenic and the subsequent changes in the spinal cord, and is not caused, it is evident, by direct action of the arsenic upon the muscle.

Now apply these results to the solution of the case before us, and see how easily most of its symptoms are explained. Here was delirium at first, great mental

perturbation subsequently, a deeply-injected eye-ground: the arsenic was acting upon his brain. Indeed, there can be no doubt, if I read this clinical history correctly, that its action upon the brain preceded its action upon the extremities. He entered the hospital in this curious condition; but the resident physician informs me that he certainly was able to walk on that day, and it was not noticed until afterwards that he could not stand,—arsenic acting upon the spinal cord just as in the experiments upon dogs, where the spinal cord was found in a state of congestion, with more or less inflammation. But what portion of the spinal cord is principally invaded? This—which I have already explained to you will vary according to where the arsenic chiefly accumulates and leads to secondary changes—is solved by the clinical investigation. Here marked interference with nutrition showed that the disturbance must have been chiefly in the gray matter of the anterior cornua, where are situated the large ganglion-cells. Thus, applying the results of recent experimental investigation to the clinical history of the case, we have the pathological conditions unfolded, or at least made almost certain.

In concluding the review of the symptoms and the causes of the case, it may be of interest to you to know that we have used the muscle-trocar of Dr. Hart upon these wasted muscles of the legs, and found that they had undergone considerable degenerative change. Some of the fibres showed fat-globules, but the most of them had rather a waxy appearance. So far as I know, these microscopic changes have not in cases of this kind before been demonstrated. I will therefore describe them more in detail. The tissue was pale. The changes noticed in the muscular fibre were those of simple atrophy, reduction in size with faintness of striation, rather than fatty degeneration; there was also a state of things akin to waxy change, the fibres were found converted into rounded lumps, and broken up transversely, their corners rounded off, resembling the waxy degeneration sometimes found in the muscles of typhoid-fever patients. They were not, however, homogeneous vitreous masses, but clouded, and granular for the most part; yet fragments were seen which were highly refractive and lustrous. There was some fatty atrophy of the connective tissue, and here and there hyperplastic changes, not only relative but absolute.

You see the remarkable improvement in the muscular system which is taking place, and you can believe me that the mind also has improved: so that we are now able to assume that the disorder of the spinal cord, like that of the brain, will soon pass away; at least it will do so to a very great extent.

It only remains to speak of the treatment, and what remedy has been especially serviceable. Iodide of potassium in large doses, in my opinion, has been the principal agent in effecting the beneficial change. Iodide of potassium is not only very effective in eliminating mineral salts from the system, but at the same time it favors better nutrition after morbid processes. It is used in various forms of metallic poisoning, and some of its good effects in this case I attribute to its power of elimination. But I cannot think that it has acted this part alone: it has also been a great modifier of tissue-change, and especially of pathological change. However this may be, we cannot doubt the result: there has been great improvement. You could hardly believe the patient to be the same person if you had seen him, as we did, a few months ago, so emaciated and almost idiotic. He has been taking twenty grains of the potassium salt three times a day, which comparatively large dose he has borne well and fattened under it. Previous to its administration, while mainly on general tonics, he was not gaining. He has good diet, and to the affected muscles the faradic current is applied every second day.

You may ask, Will complete recovery take place here? In the brain, yes. I do not believe that there will be any alteration or serious impairment of the mental powers; the brain-cells will be restored to their normal functions. Will he recover fully the use of his limbs? In the upper extremities, yes; but in the lower extremities I scarcely think that he will ever do so entirely. He may walk about, even without crutches, but I hardly believe that he will recover the use of these wasted flexor muscles of the foot.

Judging by the improvement of the last month, he will come very near to a recovery; but he will never be entirely a healthy man, as he was before he began the habit of taking arsenic in pinches for its beautifying effect.

March 7.—I add this note as to his present state. His general condition is good; he has continued to gain in flesh, weighs 132 pounds. He can now read with the aid of the same glasses that he used before he fell ill; has no headache, only occasional vertigo; the muscular system is well developed in the upper half of body; the legs are gaining in size,—left calf measures 11½ inches, right, 11¼ inches. He can walk with a cane, and go up- and down-stairs by himself. The appetite and digestion are good. The skin is in good condition, except in the feet, where there is some erythema and scaling; around the toe-nails there is superficial ulceration. He sleeps well at night, and is in good spirits.

## ORIGINAL COMMUNICATIONS.

### THE PHYSIOLOGY OF CLIMATE, SEASON, AND ORDINARY WEATHER-CHANGES.

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San Francisco.

(Continued from page 369.)

*THE PHYSIOLOGY OF SEASON.*

IN regions where spring, summer, autumn, and winter are well marked, and the annual thermometric range is considerable, the physiological changes induced by the rotation of the seasons correspond more or less with those caused by zonal change of climate. For example, Table IV., which epitomizes some observations made in San Francisco during 1878–79, proves that the spirometric capacity of the lungs rises from two hundred and forty to two hundred and sixty-seven cubic inches under an increase of 35° Fahr. in-doors.

*TABLE IV.—TO CONTRAST WINTER AND SUMMER SPIROMETRIC CAPACITY.*

| | Winter. | | Summer. | | Difference. | |
|---|---|---|---|---|---|---|
| | Temperature—Air. Fahr. | Spirometer. Cubic inches. | Temperature—Air. Fahr. | Spirometer. Cubic inches. | Temperature—Air. Fahr. | Spirometer. Cubic inches. |
| Lowest | 51° | 240 | 66° | 243 | 15° | 3 |
| Highest | 75° | 252 | 86° | 267 | 11° | 15 |
| Average | 65° | 248 | 70.5° | 259 | 5.5° | 11 |
| Range | ... | ... | 35° | 27 | | |

Table V. further shows that the number (and, doubtless, the depth) of the respirations are diminished.

*TABLE V.—TO CONTRAST THE NUMBER OF RESPIRATIONS PER MINUTE, SUMMER AND WINTER.*

| | Winter. | | Summer. | | Difference. | |
|---|---|---|---|---|---|---|
| | Temperature—Air. Fahr. | Respirations per minute. | Temperature—Air. Fahr. | Respirations per minute. | Increase of Temp. Fahr. | Reduction of Resp.—Summer. |
| Lowest | 58° | 13.5 | 65° | 12 | 7° | 1.5 |
| Highest | 75° | 16.5 | 86° | 16 | 11° | 0.5 |
| Average | 66° | 14. | 70.6° | 14 | 4.6° | 0.5 |

Tables IV. and V. together clearly indicate a reduced respiratory function and pulmonary vascularity during summer, similar to what occurs during tropic heat. Again, Table VI. shows that the temperature of the body (in-doors and under the tongue) rises perceptibly in summer,—namely, from 99.62° (average winter temperature) to 100.16° Fahr. (average summer temperature),—a fact which corresponds with and corroborates the rise observed in the tropics.

*TABLE VI.—TO COMPARE THE SUMMER AND WINTER TEMPERATURE OF THE BODY.*

| | Temperature. Winter. | | Temperature. Summer. | | Difference in summer. | |
|---|---|---|---|---|---|---|
| | Air. | Body. | Air. | Body. | Air. | Body. |
| Lowest | 58° | 98.75° | 65° | 99 50° | 7° | 0.75° |
| Highest | 75° | 100.25° | 86° | 100 50° | 11° | 0.25° |
| Average | 66° | 99.62° | 70.6° | 100.16° | 4.6° | 0.54° |

Again, Table VII. shows that the pulse beats less frequently (and, perhaps, less forcibly) in summer. This corroborates former observations for the tropics.

*TABLE VII.—TO COMPARE THE SUMMER AND WINTER PULSE.*

| | Pulse. Winter. | Pulse. Summer. | Reduction in summer. |
|---|---|---|---|
| Lowest | 68 | 72 | |
| Highest | 100 | 86 | |
| Average | 84.2 | 83 9 | 0.3 |

While these phenomena are in progress there is, doubtless, a slight change in the hepatic secretion also. The perspiration is likewise notably increased, and the urine perceptibly diminished.

On the return of winter, results of the very opposite nature ensue, corresponding

to those which occur on moving from tropical to temperate regions; and, although in the climate of San Francisco, where the thermometer seldom falls so far as, and never goes much below, the freezing-point, and the annual range of temperature is comparatively small, these evidences of functional change are not so great as they are in other parts of the Pacific slope, and especially in the Middle and Eastern States, where the summer heat and the winter cold are much greater, still, they are sufficiently marked to be both interesting and important. In the latter regions, where the thermometric range is considerable, these physiological changes are correspondingly increased, and more like those induced by climate. And there can be little doubt that both in their cause and sequence these seasonal phenomena are not only identical with the greater ones induced by zonal change of climate, but also that they sometimes even rival them in extent and importance. In summer there is an increase in the cutaneous vascularity and function, and a reduction in those of the lungs, kidneys, and other internal organs and parts, while during winter the internal organs become turgid and functionally active at the expense of the external ones.

### *THE PHYSIOLOGY OF ORDINARY WEATHER-CHANGES.*

The frequent, often considerable and sudden, diurnal weather-variations, which occur everywhere and mark one day from another, night from day, and even one part of the day or the night from another (for example, mid-day or midnight from morning and evening), induce physiological phenomena in every respect like those caused by climate and season. On a warm day, or during a succession of warm days, the pulse (*cæteris paribus*) becomes slower and feebler; the bodily temperature rises somewhat; the perspiration increases; and if the ingesta, exercise, and repose were alike, the urine would be less in quantity by day than by night, owing to the higher temperature. As it is, it is greatest then, because these influences more than counterbalance the effect of heat. The respiratory function is also least active during the *warm* hours of the day. This is shown indirectly by the spirometric capacity being greatest then. For example, it fell from two hundred and sixty-one cubic inches at 3 P.M. (temperature 73° Fahr.) to two hundred and fifty-two cubic inches at 11 P.M. (temperature 68° Fahr.) It also rises and falls all the year round, with the difference between one day's temperature and another. Thus, in summer, at 3 P.M. (temperature 68° Fahr.) it was two hundred and fifty-two cubic inches, whereas next day (temperature 74° Fahr.) it had risen to two hundred and sixty-one cubic inches, and the following day (temperature 86° Fahr.) to two hundred and sixty-seven cubic inches. In winter there is a similar rise and fall with the temperature. Thus, one day at 3 P.M. (temperature 68° Fahr.) it was two hundred and forty-nine cubic inches, next day (temperature 58° Fahr.) it fell to two hundred and forty cubic inches; on the following day (temperature 64° Fahr.) it rose to two hundred and fifty-two cubic inches. Doubtless the number of respirations and their depth are also diminished. And there can be little doubt that these physiological changes have the same cause, although less pronounced, partly from the slighter and shorter difference in the temperature, and partly from their being more affected than the climatic and the seasonal phenomena by such disturbing agencies as food, exercise, clothing, artificial warmth, etc., which sometimes counterbalance and even entirely obliterate them. Notwithstanding this, however, when the body is put under the strict conditions necessary for experimental research, or when the diurnal weather-changes are very marked (as they often are in some seasons and places), and the difference in the temperature is great, especially when the latter rises to tropical heat and sub-arctic cold, the physiological phenomena now mentioned are sometimes as great and important as those resulting from climate and season. Moreover, even when not so great as the climatic and the seasonal changes, these diurnal ones are often more trying and dangerous from their suddenness; and *many and severe diseases result therefrom in all latitudes*, especially when weak organs predispose, and where the diurnal range of temperature is great and trying.

Similar but minor phenomena likewise follow subjection to *artificial climates*. Thus, on moving from the cold external air into the heated atmosphere of a room, hall, church, etc., the bodily temperature, skin-function, and spirometric capacity of the lungs soon increase, while the number

of respirations diminish, thereby indicating a diminished respiratory function. For example, on going from the external air (temperature 30° Fahr.) into a room (temperature 57° Fahr.), an individual's respirations fell from 17.5 to 15.8 per minute, and the spirometric capacity rose from two hundred and thirty to two hundred and forty-two cubic inches. So also an individual's temperature (under tongue) rose from 97½° to 98½° Fahr. on going from a temperature of 52° to one of 63° Fahr. Phenomena of an exactly reverse nature follow an opposite change of temperature. When the difference in temperature is greater than in the above instances, the resulting phenomena are necessarily more important; and, though usually not so great as those induced by climate or season, these changes are frequently more sudden and correspondingly trying to the implicated organs, especially when the surface is unusually chilled by imperfect clothing. Unquestionably many inflammatory diseases of internal organs, especially the lungs, originate thus.

Similar but milder phenomena follow subjection to heat or cold otherwise induced, as, for example, by warm or insufficient *clothing*. The former not only increases the temperature and exhalation from the skin, but also augments the spirometric capacity by from ten to fifteen cubic inches, thereby indicating reduced lung-function. Thin clothing does the reverse,—chills the surface and congests internal organs. *Exercise* first lessens and afterwards increases the spirometric capacity. Thus, at 3 P.M. (temperature 66° Fahr.) a spirometric capacity was two hundred and sixty-one cubic inches; at 4 P.M., after a smart walk (temperature 66° Fahr.), it was only two hundred and forty-three cubic inches, showing that the lungs were congested and increased in physiological activity; but shortly after, when perspiration appeared, the spirometric capacity soon rose to the old standard, the skin having come to the aid of the lungs and induced what is known as the "second wind." So the hot-water bath increases the temperature in health (*e.g.*, from 97⅓° to 98½°), as well as the spirometric capacity of the lungs. As is well known, the cold bath has an opposite effect,—first cools the surface, and then the body generally, depleting the cutaneous capillaries and congesting internal organs.

These numerous and widely-dissimilar vital phenomena, arising from apparently occult factors either in climate, season, or ordinary weather-changes, invariably recur when the conditions are identical; and, with our present knowledge, it is now possible to explain and correlate them, define their extent, and point out their pathological, etiological, hygienic, and therapeutic bearings. Individually they are links of one chain; and the following table, in which the scattered, complex, and apparently disconnected data are grouped together, will go far to prove their relationship, collective association, and mutual functional bearing, ordinary or vicarious.

| | | + indicates increased and — diminished function. | |
|---|---|---|---|
| | | Change from temperate zone to tropics; winter to summer; night to day. | Change from tropics to temperate zone; summer to winter; day to night. |
| External organs | Skin function | + | — |
| | Skin temperature | + | — |
| Internal organs | Lungs | — | + |
| | Kidneys | — | + |
| | Liver | — | + |
| | Heart | — | + |

Seeing that an increase of function—no matter whether that may be secretion or not—is equivalent to and aided, if not caused, by an increase in the vascularity of the involved organ, while a diminished function indicates a corresponding vascular depletion, it follows that the above physiological changes are equivalent to an *increased or diminished blood-supply;* and, following up this clue, it will next be noticed, from Table VIII., that an increased function and vascularity of certain organs invariably accompany an increase in other organs and a simultaneous decrease in certain others. Moreover, this increased or diminished vascularity and function occur mainly in organs whose functions are not only special, but also vicarious,—viz., the lungs, kidneys, skin, and liver,—that is, in the four great depurating organs; so that the change involves chiefly the excretion of carbon, water, and perhaps nitrogen.

It will also be observed that the organs thus physiologically grouped in vascularity and function, either on the side of increase

or of decrease, are the *internal* and the *external*, the *external* being most vascular and active in *high* temperatures, with a corresponding decrease in internal organs, while the *internal* are most active and hyperæmic in *cold* atmospheres, at the expense of the correspondingly depleted and inactive external organs. In short, change of climate, season, and such weather-variations as involve an increase of *heat* usher in two different sets of phenomena,—namely, an increased turgescence and functional activity of external organs and parts, with a diminished turgescence and functional activity of internal ones; while opposite changes that involve an increase of cold likewise induce two sets of changes the very reverse of those caused under the previous circumstances.

The only theory capable of satisfactorily explaining and correlating these apparently involved and contradictory physiological phenomena is that they are, individually and collectively, due to what may be termed the *climatic* law of the circulation, the main feature in which consists in a change, redistribution, readjustment, or diversion in the blood-current, which in *warm* atmospheres tends more towards *external* organs—that is, to the skin, cutaneous glands, etc.—and necessarily less towards internal ones. In *cold* temperatures the reverse follows, the lungs, kidneys, liver, and other internal and circumosseous organs and parts being then congested and functionally excited at the expense of external or peripheral ones. The great base fact thus is that these phenomena are merely the outward and visible expression and result of this great and important law, that *heat* congests *external* organs, thus depleting internal ones, while *cold* does the reverse, and congests *internal* organs by depleting external ones. Doubtless the entire volume of the blood and every organ and part of the body participates in these changes, and becomes either anæmic or hyperæmic, according to its position and relations. The extent of the resulting phenomena shows not only how much these factors—climate, season, and weather—influence individual parts and the body generally, but also that they affect it more than any other agency to which it is exposed.

Although the body, both in its healthy and in its diseased states, is materially affected during climatic, seasonal, and weather changes by other meteorological influences, especially the amount of sunshine, humidity, barometric pressure, electricity, situation, physical condition and conformation of the country, chemical and physical purity of the air, etc., unquestionably the never-absent factors which have most to do, directly or indirectly, with the production of this diversion in the blood-current and the resulting physiological phenomena are *heat* and its reverse, or, rather, its absence,—*cold*. Both of these, moreover, are double factors, inasmuch as they involve not only the temperature of the *air*, but also, and primarily, that of the *body*, especially the cutaneous system.

Seeing that the highest temperature during these experiments was only 88° Fahr., and as the resulting physiological phenomena begin to manifest themselves long before the temperature of the air reaches that of the blood (98° Fahr.), or even the lower temperature of the skin,—say when the aërial temperature is 90°, 85°, or 80° Fahr., and even less,—it follows that they do not arise either from direct or radiated solar heat, nor, indeed (except indirectly), from the heat of the air at all, but from the withdrawal of the cold air, the effect of which kept the cutaneous temperature down, and the resulting slight increase in the surface caloric of the body. That the latter would soon rise considerably higher than it does but for the cooling produced by evaporation of the increased perspiration is proved by disease and the increased temperature of the skin when the perspiration is stopped. This slightly-increased cutaneous heat is, doubtless, the earliest of all the physiological results of increased aërial temperature, and the forerunner of the subsequent and major ones. An early sequel of this is hyperæmia of the cutaneous capillaries, induced partly by the direct sedative, relaxing, and dilating effect of heat on the vessels, in or near which the surface caloric is generated, and partly, and no doubt mainly, through the cutaneous nervous system.

Modern research is proving, step by step, that not only this but every organ, part, and even cell, every function and vital process, is, both individually and collectively, under the control of the nervous system. Luchsinger, Wood, Field, and Nawrocki have lately shown that the sweat-glands have definite nerve-fibres and

special nerve-centres situated probably in the medulla oblongata and spinalis. Stimulated by heat, the thermic nerves and centres, acting, doubtless, in concert with the sudorific centres and nerves, soon induce increased perspiration, the evaporation of which withdraws latent heat, and thus cools the surface, as the cold air previously did. Adamkiewicz has shown that external physical, and therefore internal or body, caloric is one of the stimuli which excite this secretion, and also that the activity of the secretion seems to stand in direct relation not only to the temperature of the air, but also to that of several parts of the body.* Experiment has also shown that the secretion of sweat is essentially independent of any changes in the general circulatory system, but is controlled by the nervous system, thus proving that perspiration is not a mere transudation, but the result of the excitation of special glandular cells by the stimulation of certain nerves, which act according to the varying wants of the system. On the other hand, on subjection to a cold or temperate atmosphere this acts as a stimulant and ultimate paralyzer of the sudorific nerves, and a direct contractor of the cutaneous capillaries, thereby checking the perspiratory function. Moreover, while these changes in the cutaneous system are in progress, either from heat or from cold, the nervous system is simultaneously increasing or decreasing the circulation and functional activity of other vicarious or independent organs, and at the same time adjusting and correlating them, and acting as a bond of union in keeping the whole in harmonious — that is, in healthy — action.

In taking a comprehensive view of the subject, the most important and, indeed, paramount physiological effect of heat, and that which causes a majority of the others, is thus a constantly-varying balance of the circulation, during which the vital tide-wave sways under cold more towards central or internal (cranial, thoracic, abdominal, pelvic, and circumosseous) organs and parts, and under heat more towards external or peripheral ones, the one becoming injected or turgid at the expense of the other. The necessary result of this frequent oscillation in the blood-current is a constant change, by way of increase or decrease, in the functions of the different organs thereby depleted or congested, especially the secretory ones. In short, the local vascular determinations or anæmiæ thus induced are the causes of the different climatic, seasonal, and weather physiological changes above described.

It also follows that, in the United States or elsewhere, the greater the thermometric range encountered, either from change of latitude, altitude, season, or local weather-variations, the greater are the physiological changes so induced, and the more important these are from both a hygienic and an etiological point of view; and equally apparent is it that in places where the thermic range is less these changes are correspondingly reduced in extent and medical significance.

These physiological facts bring into especial prominence the function and vascularity of the skin, that organ which in the tropics has to bear the brunt of this sanguineous tide-wave from internal parts, and the chilling of which in cold weather sends a corresponding tide-wave to congest internal organs. Medical men, familiar enough with the larger vessels of the circulation, are too apt to overlook or underrate the great extent and importance of the capillary system, especially that of the cutaneous surface, the organ in which the physiological changes now spoken of mainly originate, seeing that it is on the cutaneous nerves and capillaries that the heat or cold which induces them first acts. Internally the blood is massed together in bulk, whereas on the cutaneous surface it is minutely divided and spread out in a dense net-work of capillaries. These microscopic vessels are not only the largest in the body next to those of the medulla of the bones, varying from $\frac{1}{3000}$ to $\frac{1}{2000}$ inch in diameter, but are so thick-set that they are separated by interspaces only three or four times larger than the vessels. The great importance of the cutaneous capillary system will become more evident if we recollect the vast extent of the cutaneous surface and the many structures which this great emunctory includes. These vessels supply,—1st, the perspiratory *glands*, which (reckoning two thousand eight hundred to a square inch and two thousand five hundred square inches as the cutaneous surface of a man of ordinary size) gives about seven million glands, which is equal to one million seven hundred and fifty

* London Lancet, June 14, 1879, p. 852.

thousand inches, or twenty-eight miles, of tubing;* 2d, the tactile *papillæ*, which Sappey estimates at one hundred and fifty millions for the entire surface;† 3d, the cutaneous *lymphatics;* 4th, the numerous hair *follicles;* 5th, the sebaceous *glands;* 6th, the *corium* itself; 7th, the *fat clumps* beneath it; 8th, the subcutaneous *cellular tissue.* Another apparently trivial but correlatively significant fact,‡ which will show the importance of the capillary system and prove that the volume of blood which these are capable of receiving is much greater than usually supposed, is this, that the combined area of the smaller venous branches is greater than that of the main trunks, so that the venous system and its contents represent a cone, the *summit* or smallest part of which corresponds to the heart, and the *base* to the circumference of the body. The capillaries which intervene between the venous and arterial radicles are necessarily of still greater volume; and thus we may estimate that the proportion of the total blood of the body which these cutaneous capillaries receive is probably not far short of one-fourth, if not one-third, of the whole.§ These facts will show that as with the capillaries generally, by which the most important processes of the body, both of animal and of vegetable life, are carried on, so those of the skin really play a far more important rôle in the animal economy than the larger conduits. The cutaneous nerve-supply is equally bountiful. Some idea may thus be formed of the importance of this vasculo-nervous net-work, and the amount of blood which at all times circulates through the skin, and the quantity which may be withdrawn from the general blood-current of the interior and diverted skinward to congest the cutaneous capillaries by exposure to heat, or, on the other hand, returned so as to deplete it under the opposite influence of cold. For example, it has been shown that in 83° Fahr. the lung vascularity is diminished by 17.88 fluid-ounces through reduced respiratory function. This goes mainly to the cutaneous supply. To this add the 17½ per cent. derived from the kidneys, also the 0.15 per cent. from the liver, and a like percentage from other internal organs, the exact amount of which, for obvious reasons, cannot be given in figures, but which, nevertheless, goes to swell the blood circulating at or near the surface. The sum of this probably raises the *cutaneous* circulation by two or three pounds, that is, to a total of from nine to twelve pounds, instead of from seven to nine pounds, as before.

(To be continued.)

* Wilson. Krause reckons the sudoriparous glands at two million three hundred and eighty-one thousand two hundred and forty-eight in number (Kirkes).

† Nouveau Dictionnaire de Médecine et Chirurgie, tome xxvi, pour 1878. ‡ Gray's Anatomy, p. 535.

§ The total blood in the body is reckoned at one-fifth of the weight,—*e.g.*, at twenty-eight pounds in one hundred and forty (Kirkes).

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## OBSERVATIONS UPON RÖTHELN.

BY LOUIS A. DUHRING, M.D.,
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WITHIN the past six weeks a number of cases of rötheln, or so-called "German measles," have come directly or indirectly to my notice. On several occasions I have been called upon to give an opinion concerning the eruption, the nature of which had not seemed clear to the gentlemen in attendance. In all of these cases the diagnosis proved to be rötheln. From the fact, therefore, that difficulty is sometimes experienced in recognizing the affection, and for the reason that the nature of the disease is not thoroughly understood, I beg to present the notes of several cases which have been recently under my observation. I shall also refer to some interesting data communicated to me through the kindness of friends. The first case that I shall give may be regarded as typical of the affection and of the efflorescence in particular.

I was asked to see a young lady, twenty years of age, whom I had a short time before attended for an attack of herpes iris. She was apparently in good general health. The evening before she had complained of stiffness of the neck and slight swelling of the cervical glands. Simultaneously there appeared a copious, superficial, erythematous eruption, occupying the neck, chest, and back. There were no febrile symptoms, nor was there even malaise. The pulse and temperature were normal. There was no sore throat, erythema of the fauces, cough, or coryza, but there was very slight suffusion of the eyes. This symptom, however, was not marked enough to be appreciable to the patient. She felt perfectly well.

Upon examination, marked engorgement

of the cervical and post-cervical lymphatic glands was found to exist. A half-dozen of the glands could be readily detected in passing the hand over the integument, enlarged to the size of small almonds. The eruption was now general. It was, however, most pronounced about the chest, back, arms, and thighs, and faded towards the hands and feet. It was multiform in character, and consisted of more or less confluent, disseminated, ill-defined, pale-red or rosy, punctate and small split-pea sized faintly defined macules. In some localities, as about the forehead, some of the lesions were slightly elevated, producing a somewhat roughened state of the skin. The punctate lesions, the size of small pin-heads, were seen to best advantage over the back. The larger lesions were very indistinct in outline, and were irregular in shape and of variable size. They were all without exception ill defined. The efflorescence, therefore, as a whole, presented a light erythematous faintly macular form. The individual lesions could be isolated only with difficulty. Over the trunk the skin was everywhere hyperæmic, the lesions existing in such profusion as to constitute an almost solid sheet of rosy erythema. Nowhere could any large split-pea or finger-nail sized macules be found. There was no itching or heat of skin.

The eruption bore more resemblance to common measles than to any other disease, but the lesions were considerably smaller and finer, and were less distinct in outline and lighter in color than in this disease. Owing to the wide-spread diffusion and the punctate character of the eruption, an anomalous case of scarlatina might have suggested itself to an inexperienced observer, but the color was much paler than that met with in this disease. The complete absence of febrile symptoms, moreover, would have precluded it from being confounded with either scarlatina or measles. Apart from the efflorescence there was nothing to suggest measles. The view of the affection being a symptomatic erythema could scarcely be entertained, nor were the lesions large enough or sufficiently defined to suggest the idea of the erythematous syphiloderm. The punctate character of many of the lesions, moreover, was entirely adverse to such a view. The following day the eruption had faded appreciably, and the next day it had disappeared, leaving the skin the seat of the lightest possible desquamation. The whole attack continued about three days. At no period did the patient experience even the slightest malaise. There was consequently no occasion for treatment.

I would add to the history of this case that a younger sister, a child ten years of age, was reported to be just recovering from a slight disorder accompanied with a light erythematous rash, which the family physician had pronounced to be scarlatina. I strongly suspect, from the account given, that it was rather a case of the disease under consideration.

Another case presented itself to my notice at about the same time. I was requested by a prominent physician of this city to see his daughter, about twenty-five years of age, who had an ill-defined general erythematous eruption which had existed four days. The diagnosis, it was stated, was somewhat obscure. Another physician had also seen the patient, but was unable to arrive at a conclusion as to the nature of the disease. The curious feature of the case, it was remarked, was that while the eruption was apparently simple, and there were no symptoms of malaise, the cervical and post-cervical lymphatic glands were all very markedly engorged, and were somewhat painful. I subsequently found, moreover, that the post-auricular glands were also materially enlarged, the whole picture reminding one of the glandular involvement of early syphilis. The history given by the patient was that the first symptom noted was a slight stiffness of the neck, when later the glands were discovered to be affected. This occurred five days previously, and the following day the eruption appeared rather suddenly, as a faintly-marked pale-reddish, punctate, small, ill-defined macular, erythematous, diffuse rash, occupying especially the face, neck, chest and back, arms and thighs. The scalp was also invaded. There was no heat of skin or itching. There had been no malaise, fever, cough, or coryza, the patient remaining in the enjoyment of her usual good health.

I saw the case on the fourth day, when the efflorescence was somewhat paler than it had been and was already beginning to show slight desquamation, so slight, however, as to have escaped the notice of the patient. The lesions were identical in form with those of the first case. Three

days later, all trace of the eruption had disappeared, and the engorged glands of the neck had decreased markedly in size. The patient had been about and upon the street daily throughout the attack, and, apart from the affection of the skin, considered herself perfectly well. The resemblance of the eruption to measles had not, I believe, been entertained by the several physicians who had seen the patient.

A week or ten days later I was asked by Dr. C. H. Thomas to see a little boy, aged six, suffering with a slight general rash. It proved to be the same disease, the lesions of the skin being almost identical with the other cases described. The engorgement of the cervical glands was also a marked feature here. There was, moreover, in this case some malaise, and also slight suffusion of the eyes.

Dr. Thomas informed me that he had been called to see two other children in this household (where there were in all six children) about ten days before, and had found them with very slight febrile symptoms, together with a disposition to sneeze and to cough, which passed off in a few days. About the time that the children were thought to be recovered, however, a general erythematous eruption appeared. It had been undoubtedly a mild form of the disease under consideration. It subsided completely within three days.

I have since learned that ten days after the little boy whom I saw was attacked, the disease made its appearance upon the baby of the family, in the form of a profuse, very fine, punctate, erythematous eruption, without constitutional disturbance; and, moreover, that at the same time a colored servant of the house, a lad of fourteen, was also similarly attacked. In this family, therefore, five children were affected at different dates within a period of six weeks. These cases would seem to prove its contagious nature, were such proof required.

Dr. Thomas further tells me that about a month ago he attended a family in St. Alban's Place, where several children had the same disease in a mild form, and that he had heard that there had been numerous instances of it in the same street, all being of a light type,—in many cases so light that the family physician had not been called upon.

The affection has unquestionably been in our midst certainly for several months, and, latterly, in some localities in the form of an epidemic. Dr. I. Minis Hays, Physician to the Pennsylvania Institution for the Deaf and Dumb, informs me that the disease has existed extensively in this institution during the past two months. The inmates here are from ten to twenty years of age. The disease first made its appearance shortly after Christmas, beginning with the girls, and was confined to them until quite recently, when the boys began to be attacked. There have been about fifty cases of the disease, almost all being among the girls. About one-third of the girls of the institution have been affected. The disease manifested itself in the form of outbreaks, appearing every week or two, when from ten to fifteen would be attacked. These would recover, and in the course of a few days another group of cases would be reported. Its contagious nature was unquestionable. With the exception of five or six cases, Dr. Hays states, none of the patients presented constitutional symptoms, and even in the majority of these there were no marked features of systemic disturbance. When present, it consisted merely of slight suffusion of the eyes and malaise for a day or two. In one case only was there a resemblance to the general symptoms of ordinary measles.

The patients were in good general health. The eruption, indeed, constituted, in the great majority of cases, the only appreciable symptom of the disease. It was pretty uniform in character, varying but little in the many instances observed. The lesions, according to Dr. Hays, as a rule, were more macular, discrete, and defined than in the cases described by me. The average duration of the eruption was from two to three days. In one case only was there noted marked engorgement of the cervical glands, an observation which is altogether at variance with my experience. The efflorescence was without heat or itching. None of the attendants were attacked.

Dr. Hays further informs me of the interesting observation that in the spring of 1880, eight months previously, common measles prevailed in the institution, there having been at this period forty-six cases of this disease, and that about fifteen of this number had recently suffered with the present epidemic of rötheln.

Dr. James Markoe, Physician to Girard College, writes to me, in reply to an inquiry, that the disease also exists at the

present time sporadically among the inmates of this institution. In the children's asylum of the Philadelphia Hospital, on the other hand, no cases have occurred this winter. The chief nurse of this department, a competent observer who has been connected with the institution for many years, tells me that the disease has not been seen here for five or six years, when it occurred as an epidemic. She was familiar with the affection, and differentiated it from measles. It has certainly been some years, according to my recollection, since it was epidemic in Philadelphia. In private practice it would seem that some physicians have encountered it frequently during the past few months, while others, enjoying equal advantages for observation, have not met with it.

My friend Dr. D. Murray Cheston states that he has seen numerous examples of late in different parts of the city, some of them extremely mild in type, others more marked. The eruption, he adds, was, as a rule, of the same character as that described in my first case. About seventy per cent. of the cases have had common measles. Dr. J. Forsyth Meigs also informs me that he has met with numerous instances of late, and that he has always looked upon the disease as a variety of "roseola." The involvement of the cervical glands was a symptom that had not attracted his attention in the cases encountered.

Observations upon the nature of the disease, its relation to true measles, and like questions are all of interest, and it is hoped will receive attention from those whose experience has been sufficient to warrant discussion of the topic.

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## SPECIAL REPORT IN THE CASE OF S. OBERMEYER, COMPANY D, SIXTH U.S. INFANTRY—PARTIAL SOFTENING OF PONS, CEREBELLUM, AND CEREBRUM.

BY A. IVINS COMFORT,
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SYLVESTER OBERMEYER, musician, Company D, Sixth U.S. Infantry, aged 20 years, a native of Pennsylvania, and of German parentage, was under treatment at Fort Buford, Dakota, for headache, from April 15 to April 17, 1880. He was admitted to hospital April 21, where he remained under treatment for remittent fever until June 30. About this time a marked change was observed in his disposition: from being a man neat in his personal appearance and of stylish soldierly bearing, he became listless, inanimate, and neglectful. He now left the hospital at his own request, though unfit for duty, and travelled by boat and rail from Fort Buford, Dakota, to Rawlins, Wyoming. Thence he travelled with a wagon-train to Snake River, a distance of forty-five miles. August 5 he rode in a government wagon to White River, where he arrived August 10. September 26 he left White River with his company, at times riding in an ambulance and at times marching. October 6 he arrived at Fort Garland, Colorado. He was treated in quarters for headache from November 7 to November 12, when he was admitted to hospital, and treated chiefly by bromide of potassium and aperients until November 27, when he was returned to duty apparently somewhat relieved.

When with his company he was inclined to lie upon his bunk or sit motionless by the fire for hours at a time, and when aroused from this condition of listless quietude he became irritable and was inclined to give his comrades short answers. December 21 he was again admitted to hospital, complaining of headache. When asked to locate the seat of pain, he referred it to the back part of his head. The inane facial aspect of the patient was indicative of cerebral disease, so also his attitude and gait. Paralysis of the left motor externus and left facial nerves was so marked as to be detected by non-professional eyes. His tongue, upon protrusion, deviated to the left, and atrophy of its left half was plainly apparent. When standing, he assumed a stooping posture, with his head in a nodding attitude. His impressions were slow, and intellection obtuse. With his body bent forward and his toes inverted, he shuffled along with a rocking, toppling, straddling, staggering gait, apparently anxious at each successive step lest his unmanageable limbs should fail to support him. Paresis of the lower extremities was unmistakably present, existing in a more marked degree upon the right than upon the left side. The power of co-ordinated action, particularly of the lower extremities, was undoubtedly seriously impaired. There was no ptosis upon either side, but paresis of the left lower eyelid existed to such an extent that a perfect closure of the lids was rendered impossible. Its punctum failed to approximate the globe, and the escaped tears were constantly trickling down the cheek, producing excoriation of the part. His appetite was eager, almost gluttonous; his breath offensive, and bowels inclined to be constipated. Fluids were usually introduced into the mouth by the unaffected side, and, by care on the part of the patient, only rarely escaped by the affected angle. Great difficulty was experienced in

the utterance of certain consonant sounds, particularly the labial, and the intonations of the voice were of a slightly husky character. No difficulty in deglutition. That diplopia existed may be inferred from what has already been said; and amaurotic vision was also present. The patient frequently complained of tinnitus aurium. The function of the olfactories seemed to be of normal acuteness. The pulse on admission—apparently not a "pulsus cephalicus"—was slightly accelerated, numbering 82 per minute. Respirations numbered 22; temperature, 98⅘°. The ataxic gait of the patient suggested the existence of tabes dorsalis, or sclerosis of the posterior column of the spinal cord, though it differed from that of tabes in many particulars. The absence of the fulgurating pains and the characteristic cincture of tabes, and the presence of an occipital headache with diplopia and amaurosis, the paralysis of the abducens and portio dura nerves, the atrophy and deviation of the tongue, all precluded tabes from the diagnosis and established the existence of a lesion of the brain. Upon admission, a blister was applied to the occiput and nape of the neck, and the patient was treated with bromide of potassium, mild aperients, an easily digestible diet, and rest.

December 23.—The blister afforded an entire relief of the headache.

December 24.—Pain now was felt over each temple, to which small blisters were applied, and a two-grain solution of the sulphate of zinc was ordered for a conjunctivitis of the left eye.

December 25.—Free from headache. Urine voided about proportionate to the amount of fluids ingested. Specific gravity, 1.023. Reaction acid. The sediment proved to contain, upon microscopical examination and chemical tests, the urates.

January 1, 1881.—Psychical disturbances were now beginning to manifest themselves. The patient was restless during the entire night, disposed to get out of bed, constantly requiring to be watched, night and day, and at times quite delirious. Thirty minims of the fluid extract of ergot, with one-half drachm of the bromide of potassium, were now given every four hours. Diet chiefly beef-tea and milk.

January 4.—Delirium more subdued. Deglutition of solid food difficult. Tracheal râles, slight cough, voice aphonic, respiration hurried, 28 per minute. Pulse, 82. Temperature, 98⅘°.

Patient has been unable to walk or stand for several days, in consequence of lack of co-ordinating power. When lying upon the back, however, he can flex or extend the limbs at will. Vomiting and convulsive movements of the motor system have at no time manifested themselves. No contractures.

January 5.—Delirium entirely subsided. The pulse, though it remains at 82 per minute, is evidently failing in volume, and the extremities are inclined to be cold, for the relief of which dry heat was applied. The two points of an æsthesiometer could not be distinguished from one when separated at the distance of one inch and a quarter and applied to the integument of the cheek, breast, and lower extremity. The prehensile power of the left hand has been much greater from the time of admission than the right. Finely-pulverized sugar is not recognized as such upon either half of the tongue, either by tactile sensibility or by taste. Salt was said to have a "rough" taste upon the left side of the tongue, while upon the right side it was recognized as salt.

January 6.—Patient suffers from retention of urine, and is relieved by the use of the catheter. Pulse, 82. Dyspnœa. Temperature normal. Symptoms of increasing paresis of the inferior laryngeal nerve. Deglutition of solids now impossible. Diet, milk, egg beaten up with sherry, and beef-tea.

January 7.—7 A.M. Pulse, 82. Temperature, 97°. Respiration difficult, at times very rapid, as often as 60 per minute, or even more rapid than the pulse, then apparently suspended for some seconds. Increasing laryngeal difficulty, tracheal râles, a troublesome, hacking cough, without the power to expectorate. Great prostration. The case proved fatal at 9 P.M.

January 8.—Autopsy twelve hours after death. Rigor mortis very firmly established. Body somewhat emaciated. Calvarium scarcely of the medium thickness, readily separated from the dura mater. Longitudinal sinus and other vessels of the dura mater filled with a thin, uncoagulable black blood. General hyperæmia of the meninges of the brain. Arachnoid and pia mater free from opacities or adhesions, copious effusion into the subarachnoid space, fluid clear, free from the presence of pus or blood, or at least apparently so to macroscopic observation. A recent and apparently progressive softening at the inferior aspect of the cortical substance of the middle and posterior lobes of the cerebrum; the continuity of the parts readily crushing under slight pressure of the thumb and finger. The cerebellum was also in a condition of recent progressive gray softening. In the body of the pons Varolii was found a circumscribed locality, of about two-thirds of the size of an English walnut, in a well-marked condition of *white softening*. This locality was circumscribed by the normal tissue of the pons Varolii, and its condition, though not purulent, was of an almost pultaceous consistency. The medulla oblongata also appeared to be undergoing the process of softening. Liver, spleen, kidneys, stomach, and other abdominal viscera normal.

*Diagnosis.*—White softening of the pons Varolii; recent gray softening of the base

of the middle and inferior lobes of the cerebrum, also of the cerebellum; softening of the medulla oblongata.

*Cause of Death.*—Paresis of the pneumogastric nerve, œdema of the lungs, and carbonic acid toxæmia.

Death occurred in the systole of the heart's action. The heart normal, and free from endocarditis or pericarditis, its cavity containing a small quantity of very thin, black blood, free from coagulum. Valves normal, and free from fibrinous formations. The pleuræ, both costal and pulmonic, smooth and moist, preserving their polished appearance, and free from adhesions of either recent or remote origin. The lungs were of a dark-purple color, distended to about three-fourths of their fullest capacity, firm and inelastic to the touch, œdematous, and, when cut, free from frothy oozing. Complete splenization existed in their posterior aspect.

Whether the white softening existing in the pons Varolii—which may be regarded as the original lesion—had its origin in a hyperpyrexia occurring with the mountain fever, either an adynamic remittent, or a typhoid, for which the patient was under treatment at Fort Buford during the spring of 1880, or was the offspring of some hemorrhagic infarction due to the altitude of Fort Buford and having its existence prior to the occurrence of the fever, is exceedingly difficult, from either the autopsy or the history of the case, to determine.

The cerebellum, pons, and medulla are preserved as a contribution to the Army Medical Museum.

## CASE OF SUDDEN DEATH IN DIPHTHERIA.

BY J. F. WALSH, M.D.,
Camden, N.J.

JULY 1, 1880, called to see C. M., adult; she was suffering from a palmar abscess of diphtheritic origin; considerable general debility. The abscess treated with poultices and opened July 3. July 4, general malaise, chilliness, headache, prostration, sore throat. Examination of throat revealed a diphtheritic patch on uvula; pharynx, half-arches, and soft palate very red and angry-looking; tonsils enlarged, tumid, inflamed. Treatment: milk-punch, beef-tea, etc.; tr. ferri chlor., gtt. x, potass. chlorat., gr. v, every half-hour, alternately; spray—thrown into throat by means of an atomizer—of a mixture of acid. carbol. ♏xx to liq. calcis f℥vj every half-hour. July 10 (two to three days after the first patch of exudation discovered), the whole throat was involved. Up to this date patient had been doing excellently; on this day the following conditions noted: throat devoid of exudation, returning to a healthy condition; tongue very slightly coated; pulse 60, full, but rather weak; respiration normal; slight mental confusion (but this has existed from the beginning of the sickness). Three to four hours after this last visit a messenger came in a great hurry, saying that patient had suddenly got much worse. On my arrival in the room she was dead. No violent symptoms preceded death. Husband says that she suddenly got ashy pale and stopped breathing. No post-mortem allowed.

## TRANSLATIONS.

DIFFERENTIAL DIAGNOSIS BETWEEN CHANCRE AND OTHER ULCERS OF THE CERVIX UTERI.—Rasmusow, in an article of great interest both to the gynæcologist and to the general practitioner (*Viertel-jahresschr. f. Derm. u. Syphilis*, vol. viii., 1880, p. 517), says that the first point is to decide whether a given sore is a chancroid or a chancre. The points of diagnosis are as follows. The chancroid presents, as a rule, a decided loss of substance, an excavation with undermined and corroded edges, surrounded by a reactive inflammatory area. The surface of the chancre, on the other hand, is usually flat, sometimes elevated, without sharply-defined borders, and rarely shows itself as a decided loss of substance. The floor of the chancroid is uneven, like its edges, corroded, and covered with a more or less abundant yellowish or fatty-looking secretion. The floor of the chancre is smooth, as if varnished, with a grayish or reddish (flesh-colored) appearance, and it exudes a scanty sero-sanguinolent or purulent fluid. The floor of the chancroid is soft and doughy, or only gives the sensation of inflammatory exudation, while the chancre is marked by a well-marked, hard, sclerosed foundation, although this may not be so perceptible in this locality

as in chancres of the external skin. A common accompaniment of the chancre is a painless enlargement of neighboring lymphatic glands, the tumors thus formed showing, in most cases, no tendency to break down into abscesses. A similar involvement is quite unusual in chancroid, occurring, according to Zeissl, only twenty times in one hundred cases. This is particularly the case in chancroids of the cervix, in which it only occurs when these ulcers are accompanied by similar sores on the external genitalia, where abscesses form, as a rule. The chancre is followed by the appearance of general secondary symptoms, while, as is known, the chancroid is a purely local affection. As to inoculation, Rasmusow has not employed this method of diagnosis, first, because in many of his cases the capability of the secretion for auto-inoculation is evident from the appearance of neighboring sores, and, secondly, because at present the fact asserted by Auspitz appears to be proved, namely, that the secretion of the chancre can itself be auto-inoculated until the period of general symptoms.

Of other affections of the cervix which may be confounded with chancre, follicular ulcers, simple abrasions or excoriations, papillary erosions, herpetic ulcers, tubercular and cancerous ulcers, may be mentioned. As to the follicular ulcers, these are small and cup-shaped, situated in the follicles, are most numerous about the external os, and are even found within the cervical canal. They do, indeed, remind one of chancroids at first glance, but they are usually no larger than the follicles from which they originate, and do not tend to spread. Early cauterization generally heals them rapidly, whereas this treatment applied to the chancroid before its surface clears is usually harmful. Follicular ulcers are usually accompanied by enlarged and inflamed follicles, and are grouped about the external os. They are also usually accompanied by catarrh of the cervix, and even of the uterine cavity. The ordinary accompaniments of this catarrh are likewise present, — hyperplasia and hypertrophy of the cervix, fluor albus, burning in the lower pelvic region, pain in the loins, etc. Chancroids of the vagina usually run a painless course, and are unaccompanied by a catarrhal condition of the cervical canal and cervix. Quite contrary to chancre, these follicular ulcers do not run a typical course; they are quite indifferent to the influence of iodoform, which is almost a specific in the venereal sores of this locality. From the initial lesion of syphilis these follicular ulcers can easily be distinguished by their lack of induration and by the absence of swollen glands.

Simple erosions resemble chancroid and chancre only in the earliest stage of the latter; the changes which take place in both varieties of venereal sores, the ulceration of the chancroid, and the induration of the chancre, with involvement of neighboring lymphatic glands, soon serve to differentiate them.

The papillary erosion is simply a further metamorphosis of the simple erosion, and is characterized by small dark-red points scattered over its surface, which are nothing more than the points of papillæ deprived of epithelium which are found in the inflammatory condition. The papillary erosion is usually found in connection with simple erosion, and is accompanied by cervical and vaginal catarrh, the lesions also being grouped around the os uteri.

The so-called herpetic ulcer may sometimes resemble the initial lesion of syphilis, particularly when it takes the form of an erosion; but the herpetic ulcer is apt to be multiple and the several lesions run together, forming a larger sore of very irregular segmented outline. In addition, there is no induration or lymphatic glandular involvement, and the little sores tend to rapid cure.

Carcinoma is usually easy to distinguish from venereal sores of the cervix. The usual crater-like excavation, the depth of the sore, with irregular, thick, hard, bossillated edges; the uneven floor, covered with a dirty-purulent and ill-smelling secretion; the frequently accompanying hypertrophy of the cervix, with immovability of the uterus itself as the growth progresses; the occasional stubborn bleeding; the pain; the microscopic examination showing a mass of epithelial detritus and connective-tissue elements in the discharge; finally, the age of the patient,— all these point to the diagnosis between venereal and carcinomatous ulcers of the cervix.

Tuberculous ulcers of the cervix are almost unknown as primary appearances, and are accompanied by signs of tuberculosis in other organs.

FOREIGN BODIES IN THE UTERUS.—Dr. Hughes (*Le Concours Médical*, 1881, p. 56; from *Le Praticien*) gives the two following cases. In the first, a physician, in treating a frightful hemorrhage from the uterus, had placed and left in the organ a sponge saturated with toilet-vinegar. When the bleeding had ceased, he did not dare to remove the sponge, for fear of bringing it on again, and the os soon contracted so that it would not admit more than the extremity of the index-finger. The next day preparations were made to dilate the os, when the doctor was agreeably surprised to find the sponge lying in the vagina. In the second case the accoucheur had been obliged to introduce his hand into the uterus to detach the placenta, when a contraction of the organ squeezed it tightly. When the hand was extracted, the doctor found that a ring of considerable size which he had worn at the time was missing: it was supposed to have remained within the uterine cavity. He determined to wait a day or two, at the end of which time, introducing his hand into the patient's vagina, he found the os uteri patulous, and within it the missing ring, which was extracted. Dr. Hughes draws three conclusions from these cases: 1. Foreign bodies introduced into the uterus are not the source of serious accidents. 2. Such bodies should be immediately extracted without hesitation: if not possible to do so, it should be remembered that the uterus can often expel them spontaneously. 3. If interference is necessary, the os uteri is to be dilated for the purpose of extraction. [To these sapient conclusions let us add one more: Do not convert the post-partum womb into a "catch-all." Think how awkward to the young accoucheur to arrive at his front door at 2 A.M., after a hard night's labor, and find that he had inadvertently left his bunch of keys in his patient's uterus.—ED.]

BLEEDING FROM THE EXTERNAL AUDITORY PASSAGES FROM EROSION OF THE INTERNAL CAROTID.—Solkowsky (*Cbl. f. Chir.*, 1881, p. 62; from a Russian source) observed the following case. A healthy-looking soldier, 21 years of age, was admitted to the hospital suffering from a discharge from the ear, together with severe headache, chiefly on the left side, and fever. The membrana tympani was destroyed and the sense of hearing entirely lost. Injections of sulphate of zinc were employed, together with the internal use of quinine, under which the fever diminished; the headache, however, continued. On the twenty-second day of the patient's admission, severe arterial hemorrhage occurred by the external meatus, which, however, was checked by the employment of a tampon. Ergot, ice, and rest were ordered, and ligature of the carotid was suggested, which the patient, however, declined. During the following days the hemorrhage recurred daily, both by the meatus externus and by the mouth, in spite of compression of the carotid. Death supervened on the twelfth day after the first appearance of the hemorrhage. Post-mortem examination showed an erosion in the outer and under wall of the carotid three-fourths of a centimetre in length. There was no trace of the membrana tympani or of the ossicula auditus. There was some reason to suspect that this condition of the carotid was due to some injury of its coats by the injection of a concentrated acid. Solkowsky alludes to a similar case of which he had heard.

PILOCARPIN IN ALBUMINOUS NEPHRITIS.—Langlet, of Rheims (*La France Médicale*, 1881, p. 150), has treated a case of the albuminuria of pregnancy successfully by jaborandi. In this case the drug acted as a diuretic, even bringing on hæmaturia. Cantieri has obtained good results in parenchymatous and interstitial nephritis. The infusion of jaborandi may be prescribed in these cases in the dose of one drachm of the leaves infused for fifteen minutes in half a pint of boiling water. As much as a drachm and a half may be used in some cases; but in infants no more than thirty grains should be given. Nitrate of pilocarpin in doses of one-sixth to three-quarters of a grain by hypodermic injection is useful in chronic kidney troubles, in serous effusions, and in œdema of the lower extremities. Muriate of pilocarpin is to be used in still smaller doses. These salts may be dissolved in distilled water or in cherry-laurel water. As pilocarpin reduces arterial tension, the existence of cardiac asthenia is a marked contra-indication to its employment, even although the arterial tension may be reduced and the cardiac contractions insufficient.

TWO UNUSUAL TUMORS.—A. Bryk (*Cbl. f. Chir.*, 1880, No. 4; from *Archiv f. Klin. Chir.*) reports the case of a seamstress, aged 42, who had a multiple atheromatous

hygroma of the right buttock. The tumor was of twelve years' duration. The bursæ present in the normal condition were changed into large cysts. The larger biloc-ular cyst spread over the posterior part of the buttock and thigh and was as large as the head of a man. Two smaller pear-shaped cysts arose from the glutei. The contents of the cysts consisted of fattily degenerated epithelium, fatty detritus, and crystals of cholesterin; the brawny thickened walls were lined with pavement-epithelium. The diagnosis before operation being difficult, extirpation was practised,—a difficult procedure, and one which necessitated the division of muscular structure. The process of healing was slow, and was followed by anchylotic knee-joint when in a position of extension.

A case of petrifaction of the left mammary gland is likewise reported by Bryk, occurring in a woman of 62 years. The tumor had first been observed eleven months before the operation. It was the size of a goose-egg, hard, nodular, sensitive to the touch, and accompanied by lancinating pains. The patient died six days after the operation, of nephritis. The tumor, which had been supposed to be a scirrhus, turned out to be a hen's-egg-sized calcification of the gland, of which a less-than-bean-sized portion was found remaining. The calcification had taken place in the interglandular connective tissue.

THE ABSORPTION AND ELIMINATION OF QUININE—EXPERIMENTS OF PROFESSOR GIULIO (*Giornale di Medicina Militare*, October, 1880; from *Gazzetta degli Ospitale*, No. 17, 1880)—CONCLUSIONS.

Quinine certainly not eliminated by the saliva, nor by perspiration.

Not absorbed by the skin through friction, even under the most favorable circumstances.

Appears in the urine thirteen to fifteen minutes after a hypodermic injection of it.

Appears in the urine fifteen to seventeen minutes after administration by the mouth, digestion being good. If latter not so, a proportional delay.

Appears in urine twenty to twenty-five minutes after an entero-clysma, if injection retained for any length of time, and thirty to forty minutes after an ordinary enema, if not immediately expelled.

RESECTION OF ABOUT FOUR FEET OF SMALL INTESTINE—CURE.—Kœberle (*La France Médicale*, 1881, p. 128) has resected the intestine in four cases of cancer of the rectum. In each case there was cure without relapse. The last case, however, is too recent to state the result with certainty. Kœberle has also performed this resection in cases of foreign bodies in the intestine. The case of most interest among those given by Kœberle was that of a girl of 22, who had been suffering for some months with attacks of internal strangulation. Kœberle had recourse to gastrotomy. The loops of small intestine which showed in the wound were distended and congested. There was a cicatrix, above and below which the intestine was distended. Resection of a metre and a half—about four feet—of the intestine was attended by complete success, and the patient was cured in about a month.

CONVULSIONS IN CARBOLIC ACID POISONING.—Treub (*Cbl. f. Chir.*, 1881, No. 4) alludes to the fact that while animals poisoned with carbolic acid always display clonic convulsion as one of the most prominent symptoms, in man this effect is but rarely brought about. He can find only twelve cases recorded. In five of these the carbolic acid acted on the intestinal tract; in four, serous or articular surfaces absorbed the poison; and in three, poisoning took place through the application of the acid to wounded surfaces. (The references are given.) Treub goes on to give a case coming under his personal notice, where a man who had been operated upon for empyema under antiseptic precautions, and whose wound was dressed with carbolic acid dressings, was seized with convulsions, which diminished when this was changed for salicylic acid dressings.

DAILY AMOUNT OF EPIDERMIS SHED.—E. Salkowsky (*Virchow's Archiv; Cbl. f. Chir.*, 1880, p. 741) says that Moleschott has reckoned the daily loss from the skin of an adult at 14,353 grains (?), of which 2099 (?) is nitrogen, or 4497 grains urea (about one-seventh the entire excretion of urea). Salkowsky is convinced that these figures are probably about fifty times too high. If they were correct, every evening when the clothes were removed clouds of epidermis would fall. Such a considerable desquamation would be inexplicable, even in connection with the absorption of a similar weight of nitrogen. Against this view, also, experiments on dogs militate.

EUCALYPTUS OIL AS AN ANTISEPTIC.—Dr. Bassini, of Parma (*Cbl. f. Chir.*, 1881, p. 68; from *Annal. Univ. di Med. e Chir.*), has followed Schultz in experimenting with the oil of eucalyptus as an antiseptic. He employed for the spray an emulsion, prepared with the aid of carbonate of magnesium, of one and a quarter parts of the oil in one thousand parts of distilled water. The emulsion was tolerably constant. The gauze used was first made, like Schultz's, of fifty per cent.; later, of ten per cent. and five per cent. In addition, Bassini disinfected the locality of the operation with eight-per-cent. solution of chloride of zinc.

As the result of his investigations on animals and man, Bassini concludes (1) that even with ten-per-cent. gauze the smell of the wound is very disagreeable to the patient; (2) considerable infiltration takes place in the neighborhood of the wound, resulting in the formation of pus (this is in opposition to Binz's experience, according to which eucalyptus oil hindered diapedesis); (3) septic decomposition easily occurs (this was not the fault of the *technik*, for Lister's dressing under the same circumstances prevented decomposition); (4) ulceration of the edges of the wound followed the unsatisfactory antisepsis and the inflammatory exudation; (5) eczema occurred so invariably that it could not be attributed to the paraffin and wax in the dressings, but to the oil only.

These facts lead Bassini to the conclusion that, while oil of eucalyptus is analogous to carbolic acid in antiseptic influence, it cannot be regarded as harmless in its effect, and, on the whole, is decidedly inferior to the latter for practical use.

NERVE-STRETCHING IN EPILEPSY.—*Le Progrès Médical* for February 5 contains a further communication upon this interesting method of treatment. In addition to the cases of locomotor ataxia and sciatica treated successfully by this method (see *Medical Times*, January 15 and January 29), three cases have recently been operated on by this method in the Hôpital Bicêtre at Paris. The one reported by *Le Progrès Médical* concerned a woman suffering with congenital epilepsy, in whom elongation of the median and ulnar nerves was practised by Dr. Gilette in the upper third of the arm on December 31, 1880. Although the brief period which has passed since the operation does not permit a definite conclusion to be drawn, it may certainly be asserted that a decided change for the better has been wrought in the patient's condition. The attacks, which numbered ninety a month, have been already reduced to eighteen during the month of January. They are also less severe. The after-effects of the operation itself were next to nothing; the wound united by first intention, and the slight discomfort in the arm experienced by the patient disappeared after the first week.

QUEBRACHO IN DYSPNŒA.—Penzolt's results (published in this journal from the *Berliner Klinische Wochenschrift* about a year ago) have been confirmed recently by Berthold, who has used this remedy in five cases of intense dyspnœa. In one case of very severe convulsive asthma rapid relief was obtained by the administration of the tincture in teaspoonful doses given three or four times within an hour. In a case of emphysema with bronchial catarrh, the same preparation given for twenty-four hours brought the respirations from forty-eight to thirty-two per minute. In a case of pleurisy it failed. The fluid extract has been found useful in diarrhœa.

RESORCINE A DERIVATIVE OF ASSAFŒTIDA.—Dr. Dujardin-Beaumetz has recently experimented with resorcine, a crystallized body, white, odorless, soluble in all proportions. It prevents fermentation in all albuminous substances,—milk, urine, etc. The Germans have used it chiefly for wound-dressings, its action being similar to that of carbolic and salicylic acid. It may be employed in all kinds of ulcerations as a topical remedy, and as a gargle in diphtheria. It is poisonous in large doses. The remedy, in fact, is a substitute for carbolic acid, having all of its properties without the disagreeable odor.

SUBCUTANEOUS INJECTIONS OF NITRATE OF PILOCARPIN IN FETID SWEATING OF THE FEET.—Armaingaud (*La France Méd.*, 1881, p. 128) concludes as follows from his experience in four cases. Hypodermic injections of nitrate of pilocarpin appear to have a curative effect in fetid perspiration of the feet. This effect is without inconvenience to the system generally. Longer observation is required to determine if this curative action is permanent or temporary. Pilocarpin acts by a substitutive derivation on the salivary glands. Pilocarpin cannot be replaced in these cases by jaborandi with the same good effect.

PHILADELPHIA
MEDICAL TIMES.

PHILADELPHIA, MARCH 26, 1881.

## EDITORIAL.

### DR. OTIS.

THE medical profession, as well as the medical corps of the army, has sustained an irreparable loss in the death of Dr. George A. Otis, Surgeon and Brevet Lieutenant-Colonel, United States Army, which occurred at Washington on the 23d of February last. From the memorandum issued by the Surgeon-General we learn that Dr. Otis was born at Boston, November 12, 1830; graduated with the degrees of A.B. and A.M. from Princeton College; entered the medical department of the University of Pennsylvania, and received his degree of M.D. from that institution in 1850; visited Europe, and prosecuted his studies in London and Paris, and, returning to this country, established himself at Springfield, Massachusetts. He was appointed Surgeon, Twenty-Seventh Massachusetts Volunteers, September, 1861, and held this position until appointed Surgeon, United States Volunteers, August 30, 1864. After the close of the war he entered the Medical Corps, United States Army, as Assistant-Surgeon, February 28, 1866, became Captain and Assistant-Surgeon, July 28, 1866, Major and Surgeon, March 17, 1880, having received the four brevets of Lieutenant-Colonel of Volunteers, Captain, Major, and Lieutenant-Colonel, United States Army, for meritorious services during the war. While Surgeon of the Twenty-Seventh Massachusetts Volunteers, he served in Virginia, North Carolina, and South Carolina, and was on special duty in charge of the hospital steamer "Cosmopolitan," in the Department of the South. Assigned to duty in the Surgeon-General's Office, July 22, 1864, he was Curator of the Army Medical Museum, and in charge of the Division of Surgical Records, until his death.

He was well known to all medical men as the author of the splendid series of "Reports on Military Surgery" issued from the Surgeon-General's Office since the war, and as the compiler of the surgical volumes of the "Medical and Surgical History of the War."

With unusual culture, the result not only of study, but also of extensive travel abroad, he brought to the preparation of these reports an amount of information, a persistence in research, and a trained common sense in summing up his data, which, joined to an unusually clear and agreeable style, made his work a model for all writers on military surgery.

To him also are due, to a great extent, the development and arrangement of the surgical sections of the Army Medical Museum, which are the most valuable of their kind in the world. Personally, he was one of the most agreeable of companions and the staunchest of friends. His death, though sudden, was by no means unexpected, for he received his sufficient warning three years ago. He left the third and last surgical volume of his History about half completed; and we venture to predict that no one will feel his loss more keenly than the officer, whoever he may be, to whom will be assigned the duty of carrying on and completing his work.

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THE withdrawal of the trustees and faculty of Bellevue Medical College from the advanced position which was taken by them last year has been almost as surprising as was the original assumption of such place. It would have been much better for the cause of medical education, and no less useful to the parties immediately concerned, if the first change had not been made. A reformer who assumes

a position because it is right, and withdraws because it does not pay, does not, by such action, enhance either his reputation or his influence. A man ought to count the cost of war before he enters upon it; and he who runs away at the first reverse deserves the reputation of lack of judgment as well as of cowardice. The hands of minorities in many colleges struggling with majorities will be greatly weakened by the foolish haste of Bellevue; but the ultimate triumph of reform, though it may be delayed, is still assured.

## PHILADELPHIA COUNTY MEDICAL SOCIETY.

AT an adjourned conversational meeting of the Society, held at the Hall of the College of Physicians, Philadelphia, December 15, 1880, Dr. Albert H. Smith, President, in the Chair, Dr. John M. Keating read a paper entitled "Weak Spines in Young Girls, and their Treatment" (page 324).

### DISCUSSION.

Dr. Benjamin Lee said that the prospects for the permanence of a nation depended very much upon the health of its girls. No people can hope to continue prosperous while the mothers are subjects of chronic ill health. American women have been looked upon as the type of invalid women. The proper place to look for the correction of these physical evils is the school-room, and especially the manner of sitting. As a rule, every facility seems to be offered to the production of curvature of the back as far as possible, because the desks are placed so that the student must bend over the desk. On the contrary, the book should be elevated so as to be opposite the eye, and the seat should have a comfortable back, strongly convex, fully supporting the spine.

Undoubtedly the emotional type of the nervous system of many young girls may be a factor in producing this relaxed condition of the muscles which forms spinal curvature. The overstimulated brain from ill-regulated studies and exciting food is only able to do an inferior quality and amount of work. The results of food which is indigestible and too stimulating are faulty nutrition and unhealthy development of the emotional and sexual nature. An important point, referred to in the paper as an accompaniment of weak spines, congestion of the ovaries, stands more in the relation of a cause. He had always noticed this slight convexity of the spine in young girls at the time of puberty, and, as a rule, there is coexisting engorgement of the ovaries, as a result of which there is reflex irritation, and more or less effect upon the spinal muscles, not simply debility, but often contraction, usually in the lumbar region. This is the seat also of pain in the great majority of young girls. When the high shoulder is first noticed, the disorder in the lumbar region has preceded it.

As regards treatment by electricity, he could only say that he had been so well pleased with massage and systematic exercise of the affected muscles that he had not been obliged to resort to electricity, and could not therefore give an opinion. The best results can be obtained with massage and proper exercise, if taken in time, before the bones have become seriously altered in their shape or mutual relations.

Dr. Schapringer said that reference had been made to the use of electricity in eye-practice. In his opinion the muscles are not at fault in the cases mentioned, but the dioptric media: the muscles have as much power as in the normal eye. No amount of muscular stimulation would correct errors of refraction and astigmatism.

Dr. W. H. Little observed that in some forms of asthenopia electricity might prove serviceable. In a similar way he had employed it in order to exercise and strengthen the muscles of the tympanum.

Dr. W. R. D. Blackwood spoke in favor of the treatment of muscular debility by faradic electricity. He recommended to faradize only the affected muscles, and to apply the continuous galvanic current along the spine, for its soothing effect. It is better used in the evening, and he had been in the habit of allowing the patient's mother to apply it, after instructing her in regard to mode and duration of the application. This treatment had been found to be very valuable in ovarian congestion, as it favored the establishment of menstruation.

He had also employed electricity in eye and ear disorders, and in selected cases great benefit undoubtedly results from its proper application.

Dr. A. H. Smith said that he had recently had a very interesting opportunity of learning of the effect of systematic exercise upon young girls. He, in company with some friends, had paid a visit to the Girls' Normal School, where he saw thirteen hundred girls collected, who showed remarkable evidence of the value of physical training in their appearance of vigor and robust health. Considering the circumstances and conditions in life of the parents of many of the girls, he was struck by their looks of good health. This was soon afterwards explained by a subsequent visit to the room where the calisthenic exercises are taught. Every girl is obliged to spend an hour in such exercises each morning. Mr. Fetter, the principal of the school, had in-

formed him that prior to the introduction of these exercises it was very common for the students to break down before examination-time, but since their adoption there had been marked improvement in the health of the girls. Anything that can be done to improve the health of the future mothers is of incalculable importance.

Dr. W. R. D. Blackwood said that he was especially interested in the symmetrical development of the body. He found that his little girl was using the right hand exclusively, and he took the trouble to teach her to use the left equally as much. It required only two months to teach her to use the left hand with as much facility as the right. She uses them now perfectly indifferently, and writes as well with one as the other. He also makes her occasionally take her knife and use it in the left hand at the table, alternating with the right. He believes that children can be taught to be ambidextrous, if pains are taken to counteract at home the teaching at the school, where the right hand is given the preference. This practice is very useful for a surgeon, and he had accustomed himself to use his knife in dissecting in the left hand, and now uses the bistoury or saw in whichever hand is more convenient for operating.

Dr. Henry Leffmann confirmed the remarks about the position taken in the school-room, and had noticed it in boys as well as in girls. While the majority assume the usual position, there are some who display much ingenuity in contorting themselves into curious abnormal positions.

Dr. Wm. S. Stewart thought that the weakness of the spinal muscles was largely attributable to the mode of dress: the waist is enclosed in a tight-fitting corset and made as small as possible. He believed that if physicians would warn their patients against this abuse of dress there would be less of ovarian congestion and spinal weakness.

Dr. J. M. Keating, in closing the debate, said that he had been so much interested in this subject of weak spines by observing its effects in young girls, more especially in dispensary practice, that he had considered it of sufficient importance to bring it to the attention of this Society. Since this condition in young girls is commonly associated with so much anæmia and menstrual disorders as often to prevent them from reaching womanhood, it is important to take some steps to cure this evil at its beginning. The example offered at the Normal School of this city in this subject of calisthenic exercises for the students is not followed as much as it should be.

In regard to the mechanism of curvature of the spine, he considered it an important point that the weaker side yielded to the stronger, and the local treatment to restore muscular strength should be directed mainly to the convex.

In regard to his reference to electricity in the paper, he was afraid that he had been misunderstood. Without discussing the question at all, he had wished merely to express the opinion that the battery is a most powerful means of aiding muscular development, when applied properly to the muscle: the reference to the eye and ear had been made in passing only to point out the application of electricity to the small muscles of the body.

The subject under discussion, regarding the causes and treatment of weak spines in young girls, he considered as very important, being closely connected with those forming the basis of most of the chronic affections of after-life, and he insisted particularly upon instituting early treatment.

On motion, a vote of thanks was tendered the lecturer for this interesting paper.

### SPECIMEN OF DEGENERATION OF PLACENTA.

Dr. Frank Woodbury presented a portion of a diseased placenta for Dr. R. Bunting, of Roxborough. The patient had had seven still-born children, having been delivered of two living children previously. The general history in the last seven pregnancies was that she felt motion at the usual time, but at the fifth or sixth month it ceased. She would carry the fœtus until the eighth month. The placenta, as in the present specimen, was hypertrophied, heavy, and seemed like a mass of fat. The child was in the present instance macerated, and had evidently been dead for several weeks, although delivered a month before the full time.

On motion, the specimen was referred to the Committee on Microscopy.

### INSTRUMENT FOR MEASURING THE VAGINA.

Dr. J. M. Keating presented an instrument for ascertaining the capacity of the upper portion of the vagina in order to determine the proper-sized pessary. The instrument, made by Gemrig, was merely a medium-sized Hodge pessary divided in the middle transversely, and placed upon long scissor-blades, which admit of separation after introduction into the vagina, the degree of separation being marked on a scale on the handles.

Dr. A. H. Smith thought that an instrument that would accomplish what Dr. Keating had in view would be desirable.

Dr. Schapringer suggested that the blades should be separate and introduced consecutively.

Dr. Bernardy did not think the instrument necessary. The proper-sized pessary can be estimated by an experienced practitioner, and if the first one inserted is not a good fit he would scarcely fail with the second. He did not believe in multiplying instruments unnecessarily. The less instrumental interference is resorted to, the better it will be for physician and patient.

In reply to a question, the President said that in ordinary cases he preferred a modifi-

cation of the Hodge pessary. In anteversion, however, he uses the double lever pessary of Thomas.

FOREIGN SUBSTANCE IN FECAL DISCHARGES.

Dr. A. Schapringer exhibited some peculiar material passed by a child ten years old and found in the stools. When first seen, they were like the pits or part of the pulp of an orange, and were evidently of vegetable nature. He recalled the fact that during the Franco-Prussian war a woman had passed similar substances, which were ascertained by Virchow to be orange-pulp.

IMPROVED HYPODERMIC SYRINGE, WITH REMARKS ON PELLETS FOR HYPODERMIC USE.

Dr. R. S. Huidekoper exhibited an improvement of the hypodermic syringe, having a small chamber at its upper extremity, capable of containing eight or ten pellets of morphia (gr. $\frac{1}{8}$ to gr. $\frac{1}{4}$ each). The entire apparatus was compact, and easily carried in the vest-pocket.

Dr. H. A. Wilson approved the plan proposed, and exhibited his small case containing a hypodermic syringe, and several glass tubes, with a diaphragm in the middle of each so as to enable them to hold a different variety of pellets in each end. He referred again to the advantages of the pellets over the ordinary solutions, especially Magendie's solution, which now is very seldom used, and requested the President to state his opinion.

Dr. Albert H. Smith said that he had not had much experience with the pellets for hypodermic use, but that it appeared to him that it would be impossible to secure as accurate dosage by this means as in the form of solution. In gynæcological surgery he uses the mixed anæsthesia, as recommended by Nussbaum, Bernard, and, more lately, by Dr. Reeve, of Dayton, giving a hypodermic injection of morphia (gr. $\frac{1}{4}$), previously to administering the ether, as by this method the stage of excitement is bridged over and less of the anæsthetic is required. In a recent case for some gynæcological operation he had used one of these quarter-grain pellets, as recommended by Dr. Wilson, instead of the usual Magendie's solution. After the completion of the operation, and etherization had been concluded, he was surprised to find that the patient did not recover consciousness, but, on the contrary, seemed sinking into coma. Respiration fell to four or six in the minute, the pulse was thready and slow, the pupils almost invisible: she had, indeed, every symptom of extreme morphia-poisoning, from which she was only recovered with great difficulty. He could only ascribe the results to an overdose of morphia, as the patient had been etherized before without any such manifestation. The accident suggested some inaccuracy in the subdivision of the morphia in the pellets. He had always used Magendie's solution of morphia, which allowed very little danger of mistake; but the preparation of the pellets requires very careful manipulation to avoid error.

In reply to a question, he stated further that the operation had lasted about an hour and five minutes. He could not remember the amount of ether used, but it was not excessive. It required prolonged efforts at resuscitation, with artificial respiration, injections of coffee, and warmth and friction to the extremities. He was not aware that the patient was particularly susceptible to morphia.

Dr. H. A. Wilson said that the sample used by the President probably belonged to the first that were made. The pellets are manufactured by Dr. Wolff with extreme care; the muriate of morphia is first weighed out in quantities of two to four grains, into which the proper proportion of atropia in solution is placed, and thoroughly mixed; the powder is then dried, and weighed out into quarter-grain or smaller powders, the sodium chloride added, and the whole compressed. By pursuing this careful manipulation error seems to be impossible. He believed that if one of these later pellets was used, the accident in the case mentioned must be referred to idiosyncrasy or other circumstances. He recalled a case in which he had given one-twelfth of a grain hypodermically and produced all the symptoms of severe morphia-poisoning. He condemned the ordinary solutions of morphia, on account of the rapid development of a fungus, which destroys the alkaloid, so that after it has been kept some time it becomes worthless.

Dr. F. Woodbury said that he had not tried the pellets, but they appeared to present a convenient form for use, and had some advantages. As regards stability, however, it still remains to be proved that these pellets are more permanent than the solutions which they are intended to supplant: they are certainly deliquescent to some extent, on account of the sodium chloride, which has great affinity for water; nor is it to be forgotten that under such circumstances the alkaloid might become exposed to the action of nascent chlorine, and thus undergo destruction like ordinary organic matter. Whether they are permanent or not in fact is to be determined by experience rather than by theory.

The speaker could not agree with Dr. Wilson that there was such universal dissatisfaction with the form of solution for the administration of alkaloids. When fractional doses are to be administered, it is a physical fact that cannot be gainsaid, that the solution affords the only absolutely accurate method of subdividing the medicament, and for this purpose the form of solution will probably always be retained. It is not improbable, however, that the convenience of the pellets may also give them a certain range of application, the two forms coexisting, each being

useful within its own limits: the question to be decided by experience is under what circumstances to use the solution, and under what other circumstances to prefer the form of pellets. He had also some doubt as to whether morphia solutions deteriorated so much by the development of the fungus *penicillium glaucum*. His observation had led him to believe that these alkaloid solutions really get stronger by keeping, from evaporation of the water; and the development of the parasite, even if at the expense of the alkaloid, thus only serves to keep the solution at a proper strength. He could say very positively that he had used such a solution which had been kept more than a year, and found it active in the usual dose.

Dr. Bernardy understood a former speaker to say that Magendie's solution is now very seldom used, which is opposed to the facts: indeed, in some parts of the country the officinal solution is not kept on hand by the apothecaries at all. While at a watering-place on Long Island last year, he had prescribed for a lady a drachm of solution of morphia, and the druggist put up Magendie's solution: he was told subsequently that this solution (gr. 16) was the only one kept by druggists on Long Island. In regard to its deterioration upon keeping, he doubted the fact. Having an attack of lumbago one night, and finding his ordinary powders had run out, he remembered a small bottle of solution of morphia, which had not been disturbed for at least eighteen months; it had been cloudy with fungus, which had settled to the bottom. He used this old solution hypodermically in ordinary dose, and found it physiologically active. He agreed with the last speaker that the small doses are more accurately divided when the drug is in the form of solution.

MODIFIED VOLSELLA FOR TONSILLOTOMY.

Dr. A. Schapringer exhibited a volsella forceps, with the prongs bent at an angle of forty-five degrees with the handles, for use in tonsillotomy. This instrument is much cheaper than the guillotine tonsillitome, and is easier to clean; the position of the prongs also enables the operator to take hold of the tonsils better than with the ordinary volsella which is commonly used.

Dr. John G. Packard did not know that any one in this country or any other country used any instrument but Physick's guillotine for the operation in question.

Dr. H. A. Wilson said that the instrument was very little different from those in use. Prof. Gross uses the volsella, and prefers it to the guillotine, especially where the gland is much hypertrophied.

Dr. Schapringer said that the modification was very slight. Its advantages, however, were so obvious that he had been surprised that it had not occurred to some one else. The instrument exhibited he had had made for his own use in 1863.

## REPORT OF THE "COMMITTEE ON HYGIENE AND THE RELATIONS OF THE PROFESSION TO THE PUBLIC"—"ON THE RESPECTIVE DUTIES OF THE DRUGGIST AND PHYSICIAN."

*Made to the Philadelphia County Medical Society, January 12, 1881.*

"THE Committee on Hygiene and the Relations of the Profession to the Public" respectfully report as follows:

Dr. Geo. B. H. Swayze, having recently read before this Society a paper in which was discussed the injury done to physicians by certain practices of druggists to whom had been intrusted the dispensing of the prescriptions of medical men, the statements contained in his paper and the opinions elicited in its discussion led to the presentation before the Society of several resolutions designed to remedy the evils complained of. As these resolutions, with the consideration of the whole subject as discussed, were referred to the "Committee on Hygiene and the Relations of the Profession to the Public," they accordingly met for deliberation. At this meeting a report of the recent meetings of the Medico-Legal Society of this city, in which the same subject had been discussed, and also the comments of the *American Journal of Pharmacy*, Chicago *Pharmacist*, and *Pharmaceutical Journal* of London, November 23, on this subject, were fully presented. From these sources, with the paper of Dr. Swayze, the resolutions of the Society referred to your committee, and the personal evidence of members who were before the committee, it appeared that there were three special grievances laid at the door of the pharmacists:

*First.* That prescriptions sent to the shop of the druggist were renewed indefinitely, though the intention of the physician was that they should be filled but once.

*Second.* That druggists invaded the domain of the physician, by themselves prescribing for the sick instead of awaiting the prescription of the physician.

*Third.* That druggists were active agents in disseminating proprietary medicines and nostrums.

It seemed wise to your committee to bring these grievances formally to the notice of the Philadelphia College of Pharmacy, as a representative of the interests of pharmacy, and to ask a conference with that organization with a view to such a mutual understanding between representative physicians and druggists as might dissipate all difficulties. In reply to this request of your committee, the trustees of the Philadelphia College of Pharmacy appointed a committee to confer with your committee. (A copy of the minutes of this conference, at which Messrs. Remington, Taylor, Shinn, and Bullock represented the Philadelphia College of Pharmacy, is appended to this report, and to this is added a letter from Mr. Blair covering the whole subject.) As an

outcome of the discussion, the druggists claiming that they were placed in a false position by the silence of the physician, he not specifically stating that his prescription was to be filled but once, the following resolution was adopted by the committee of conference, and its substance is presented for acceptance to the Society:

"*Resolved*, That it is the sense of this 'Committee of Conference,' in order as far as possible to prevent the repetition of abuses that have arisen from the unauthorized renewals of prescriptions, that physicians be requested to write the words 'not to be renewed,' or words or symbols to the same effect, on prescriptions which they do not wish to be renewed without special orders; at the same time instructing patients in regard to the evils likely to arise from such renewals, and informing them of their wishes."

With reference to the prescribing by druggists, Mr. Taylor, on the part of the pharmacists, read the following from the Code of Ethics of the Philadelphia College of Pharmacy:

". . . As the diagnosis and treatment of disease belongs to the province of a distinct profession, and as a pharmaceutical education does not qualify the graduate for those responsible offices, we should, where it is practicable, refer applicants for medical aid to a regular physician."

As this injunction of the pharmaceutical ethics, if carried out, would meet the question of prescribing by druggists, it was adopted as expressing the sense of the committee in the premises.

In reference to the sale of proprietary medicines, Mr. Taylor, on the part of the pharmacists, read the following from the Code of Ethics of the College of Pharmacy:

"Whilst the College does not at present feel authorized to require its members to abandon the sale of secret or quack medicines, they earnestly recommend the propriety of discouraging their employment when called upon for an opinion as to their merits."

This also was adopted as the sense of the committee of conference, and it is suggested that the Philadelphia County Medical Society approve the expression of the sentiments contained in the extract cited.

The conclusion which your committee has drawn from the above conference is that the interests of the medical profession are safe in the hands of reputable pharmacists, or such as govern themselves according to the excellent Code of Ethics of the Philadelphia College of Pharmacy. But it seemed equally true to your committee that, among the thousands who keep drug-stores and dispense medicines in Philadelphia, there are many who are guilty of some one or all of the offences charged against druggists: so that your committee offer the following resolutions:

"*Resolved*, That, in the opinion of the Philadelphia County Medical Society, a druggist acts simply as the *agent* of a physician in compounding his prescriptions, and that it is a breach of his proper obligations to the physician, to renew, without his direction, or furnish copies of, any formula prescribed.

"*Resolved*, That the members of this Society will note which druggists commit such breaches of obligations, and dissuade their patients from taking prescriptions to them to be compounded.

"*Resolved*, That the members of this Society will endeavor to have their prescriptions compounded by apothecaries who do not exhibit signs or circulars, or otherwise encourage the use by the public, of patented or proprietary medicines."

Inasmuch as it appeared that many physicians themselves prescribed patented and proprietary articles, it was further

"*Resolved*, That it be recommended to this Society to reaffirm the sentiments expressed in Section 3, Article I., of the By-laws of the Philadelphia County Medical Society,—viz., 'that any physician who shall enter into an agreement with an apothecary to receive pecuniary compensation or patronage for sending prescriptions to said apothecary, or who prescribes a remedy without knowing its composition, or who shall hereafter give a certificate in favor of a patent remedy or instrument, shall be disqualified from becoming or remaining a member of this Society.'

"*Resolved*, That this Society transmit to the trustees of the Philadelphia College of Pharmacy a copy of this By-law; also their approval of the sentiments contained in the articles of the Pharmaceutical Code of Ethics, above quoted."

Finally, your committee offer the following resolutions for the acceptance of the Society:

"*Resolved*, That the report of the committee be printed in full in the 'Transactions of the Philadelphia County Medical Society,' with the action of the Society, and that their publication be asked for, also, in the *American Journal of Pharmacy* and in the *Druggists' Circular*.

"*Resolved*, That the committee be discharged from the further consideration of the subject."

It was also

"*Resolved*, That the trustees of the Philadelphia College of Pharmacy be requested to furnish each of their graduates with a copy of the Pharmaceutical Code of Ethics."

It was also

"*Resolved*, as the sense of this Society, that there is nothing in Ethics to forbid a physician dispensing his own medicines."

By order of the committee.

RICHARD A. CLEEMANN,
Chairman of the Committee on Hygiene, etc.,
Philadelphia County Medical Society.

## REVIEWS AND BOOK NOTICES.

FEVER. A STUDY IN MORBID AND NORMAL PHYSIOLOGY. By H. C. WOOD, A.M., M.D. Philadelphia, J. B. Lippincott & Co.,* 1881.

The growth of physiological research in America has been so slow that the appearance of a paper as ambitious as the one under review is an exceptional matter. We have at Harvard and at Johns Hopkins well-fitted, and in the latter place well-endowed, laboratories, but, so far, the most notable researches, and probably the most numerous as well as important, have come from men altogether without the advantages of good laboratories and the backing of plentiful means. The present essay is only one more illustration of the superior value of individual energy.

Dr. Wood had already written authoritative papers on thermal fever and the causes of fevers, and was thus led by degrees to make the vast and difficult study which now adds another valuable treatise to the many for which we are indebted to the liberal views of the managers of Smithson's foundation.

It is now several years since three men devoted themselves to the research which this volume chronicles. Two of them are dead, —Dr. Hare and Dr. Lautenbach,—and both have left behind them enough of good work to show how fair a future was lost to them. The labor thus begun has fallen for its completion altogether upon Professor Wood.

The essay is in four chapters. The essential symptom of fever is discussed in the first, and decided to be elevation of temperature: so that a natural history of fever can be had by causing it artificially through any means which gives rise to absolute increase in the animal heat. These experiments are part of Dr. Wood's essay identifying sunstroke as a thermal fever due purely to elevation of bodily temperature. The proofs of this and of the value of the use of cold as a remedy are strikingly re-stated and re-supported. Next arise for answer two questions,—What is the mechanism by which the production and dissipation of animal heat are regulated in the animal organism? Is the rise of temperature in fever due to the excessive retention or to the abnormal production of heat, or to these conjointly? And to answer these queries two long chapters are devoted.

Nothing but a careful and elaborate analysis of the hypotheses formed, of the experiments which test them, and of the conclusions reached, would do justice to this elaborate study. Save from a few of the higher students of physiology, it is unlikely that this portion of Dr. Wood's work will secure the careful attention it deserves. The only true and valuable criticism of a research so profound is to be looked for from such future experimental examinations as shall, in the hands of observers of equal force, determine the correctness of Dr. Wood's work.

In this necessarily too brief notice of what needs and deserves a full and careful review, it is, of course, impossible to describe in even a condensed form the groups of experiments, the minor inferences, the logical outcomes, and the testing of the value of one experiment or of sets of such acquired facts by others. It will, perhaps, suffice to say that, criticised from the stand-point of an old laboratory-working physiologist, the quality of Dr. Wood's work seems to me of rare excellence, and I can only regret that neither my own time nor the space here given me enables me so to analyze it as to make clear to others the strong grounds for my opinion.

On page 254 Dr. Wood states the attained facts of his own and of others' getting which enable him to state as a final conclusion what he now rests on as the theory of fever.

The facts so given will bear at least analytic statement. Their importance in relation to health, to fever states, to the therapeutics of disease and wounds, is simply enormous.

1. There is a normal range of temperature, and any disturbing causes which carry it outside of its usual limits constitute, in greater or less degree, ill health. The minimum is at 7 A.M., the maximum at 9 P.M. Fever follows a like law. The causes of these timed variations in normal and disease phenomena must have some relation to the external laws of nature, since the most profound perturbing influences —such as starvation—do not change them. One would like to know whether reversing natural habits, as by working at night and sleeping in the day, would have any influence on these phenomena. The subject is tempting enough. Why should 9 P.M. be the time of maximum body-heat? and is it so in all climates?

2. The nervous system controls the normal heat and the normal limits of heat, and *within certain* limits controls both the making and the dissipation of animal heat. The vaso-motor nerves, inclusive of the secretion nerves, chiefly control heat-loss in man: *i.e.*, by contracting the capillaries of the skin and lessening secretions, they reduce heat-loss, or, by reverse processes, increase it.

Outside of this governing and modifying influence, Dr. Wood believes in an inhibitory heat-centre which acts through spinal centres, but may be—and this seems still in doubt—a muscular vaso-motor centre, not purely endowed with power to control, irrespective of muscular action and muscle-nutrition, the extra-muscular sources of heat. Dr. Wood's experiments as to the place of heat-centres are perhaps the most interesting in his book. He thinks they may probably be referred to the pons, and are not in the cortex cerebri.

Fever he describes as a nutritive disturbance, with an elevation of temperature, and with increased chemical action in accumulated

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tissue-matter of the body. As little food is taken or absorbed, this increase of heat is sometimes enough, sometimes not enough, to compensate for the loss of heat which usually is derived from the destruction of the surplus food in the body.

The fever-rise in temperature cannot, therefore, depend solely on increased heat-product, since in fever less heat is sometimes produced than at other times when the temperature is normal. Also, great heat-product at cost of the accumulated material of the body may occur without elevation of the thermometer. In fever vaso-motor palsy causes a fall of temperature similar to but greater than that produced by a like disturbance in health. Section of the cord also causes greater lessening of heat-product than in health. The so-called inhibition centre seems to be feeble in fever, but not paralyzed.

In all or nearly all serious fever Dr. Wood thinks there is a definite poison circulating in the blood. If, he says, we believe this to be so, our creed would be: fever is due to a poison, formed within or gotten from without, acting as a depressant on such nerve-centres as regulate production and dissipation of heat. The poison, or possibly a peripheral irritation, partially palsies the inhibitory centre,—so that, the brake being off, the machine goes at speed; or, more plainly, tissue-changes increase, more heat, of course, results, and the secretions abound in the melted and dissolved wrecks of fast-disintegrating tissues. Usually, as Dr. Wood believes, the normal rises in temperature act on the vaso-motor centres so as to produce through them automatic changes in the vessels which give rise to increased dissipation of heat; but in fever these centres, like all others, we presume, fail of their function, so that, until the temperature rises enough to become potent as a stimulus to paretic nerve-cells, there is a failure in the mechanism for dispersing or dissipating heat.

This theoretic conclusion covers most of the facts, and seems to be reasonable enough, and fairly made out on the authority of the facts and experiments related.

The local fever which in a limb follows nerve-section still remains without the thorough examination it needs. We cut nerves, the limb becomes hot, and so remains for days; its temperature may even rise six or seven degrees. What changes occur in the limited tissues so warmed? How do muscle and bone differ from those of the other side when such heat-product has been long kept up? Why, finally, does the heat fall below the normal? None of the nerve-section experiments have included division of the vaso-motor filaments which run with the vessels, and which could be interrupted by tight temporary ligatures of the vessels. Nor do we know whether galvanization of the peripheral trunk of a cut nerve will reduce the local fever. It would seem as though this might be a simpler method of studying at least some of the conditions of fever.

Prof. Wood is to be congratulated on the completion of a very remarkable labor, and the University of Pennsylvania upon such a product of its unendowed and ill-furnished laboratory of physiology.

S. WEIR MITCHELL.

## GLEANINGS FROM EXCHANGES.

HEADACHES DEPENDENT ON DISEASE OF THE DURA MATER.—Dr. J. S. Jewell, in an article on the nature and treatment of headaches (*Journal of Nervous and Mental Diseases*, vol. vi., 1881, p. 64), says that headaches depending upon acute, but much more frequently subacute, forms of disease of the dura mater are much more common than is ordinarily supposed. Affections of the dura due to blows, etc., and which are accompanied by pain, may occur suddenly, or after months, or even years. Tubercular deposits, rheumatic and syphilitic influence, may also give rise to pain in the dura. It sometimes follows in the wake of sunstroke or severe exposure to cold, or arises from the extension of disease from the nasal to the cranial cavity through the cribriform plate of the ethmoid bone, or from the middle ear, as in otitis media, also from unknown causes in cerebro-spinal meningitis. In addition to these, diseases of the bones, or tumors or growths, may lead to painful affections of the dura. Also, diseases of the Pacchionian bodies, or of the brain itself, may lead to affections of the dura of a painful nature. The inflammations of this membrane are ordinarily localized rather than general. Painful affections of the dura may occur at any age, but are commoner during later childhood, youth, and the middle period of life.

With regard to the symptoms, the pain is usually definitely localized. It does not shift from place to place, as it does in many of the circumscribed pains of neuralgia; it is persistent, seldom entirely ceasing long at a time so long as the meningitis continues; it commonly begins gradually and disappears slowly; it is aggravated by anything which increases the activity of the intercranial circulation; it is aggravated by shocks to the head; it is not relieved in assuming the lying-down position. As a rule, it is made worse by increased barometric pressure and by the occurrence of cold weather, or by exposures of the surface to cold by which the cutaneous vessels are contracted, or by any other means by which vascular tension is increased, or by any means by which the cutaneous circulation is diminished in activity or repressed. It occasionally throbs when the heart's activity is increased. It is accompanied generally by more or less mental depression and by ner-

vous irritability, discouragement, and disinclination for mental and physical labor. It is rarely, though sometimes, accompanied by nausea. It is rarely accompanied by general increase in temperature of the head, though a local rise is usual.

The treatment of these affections involves keeping the patient as quiet as possible and away from bright lights and exciting circumstances of all kinds. All exercise, whether physical or mental, except the most moderate, should be avoided. The diet should be simple and unstimulating. If any acidity should appear in the stomach it should immediately be neutralized. The bowels should be kept entirely free. If there is irritation of the bladder, measures should be taken to allay it. All sexual indulgence or excitement should be avoided. All the sleep that can be secured should be had. The patient should sleep upon a gently-inclined plane formed by putting blocks of wood from four to eight inches in height under the head-posts of the bed. By this means the blood is made to gravitate away from the head, and relief is obtained. If possible, a warm climate and a locality high above the sea-level, where the barometric pressure is low, should be secured. The surface should be thoroughly protected from exposure to cold air. Alcoholic stimulants and strong coffee and tea, as a rule, should be avoided in this form of headache. Protracted hot foot-baths are in order.

Among medicines, opium is the most generally useful, either in the watery pilular extract or in the deodorized tincture. It should be given in doses of such size and frequency as to subdue the pain, and should be continued in conjunction with other measures until the pain subsides, when the use of the anodyne may be gradually withdrawn. Side by side with this it is necessary to employ large doses of the iodide of potassium. For an adult, ten grains may be given three times a day to begin with. Each day the dose may be augmented by five grains, until decided evidences are given that the remedy has produced results. If duly diluted with water, from fifty to one hundred grains may be given three times a day if necessary. If the disease is of syphilitic origin, inunctions of mercury may be employed. For this purpose the oleate is to be preferred in the strength of ten grains of the stronger oleate to an ounce of cosmoline perfumed with a little oil of roses. Inunction should be practised twice daily until the effect of the mercury is produced. Counter-irritation behind the ears and along the back of the neck by means of the actual cautery or by blistering collodion Dr. Jewell has found useful. Under this treatment, in the course of a few days, or, at most, of a few weeks, the pain abates. Tonics, as acid solutions of strychnia and quinine, may be given at this stage as required.

THE INDUCTION OF ABORTION AS A THERAPEUTIC MEASURE.—Dr. Priestley recently read a paper under this title before the London Obstetrical Society (*Med. Times and Gaz.*, vol. i., 1881, p. 50), in which the following reasons were adduced as justifying the induction of abortion. 1. Pelvic deformity so great as to preclude the birth of a viable child. 2. Narrowing of the genital canal by tumors, cicatrices, or cancers so as to prevent the passage of a viable child. Great care is here necessary not to overestimate the amount of obstruction. If a series of cases of Cæsarean section with fair success should occur, the reasons for inducing abortion in such instances would be undermined. In cases of cancer there is fair ground for this operation, since the woman has but a short time to live in any case. 3. In obstinate vomiting of pregnancy, where all other expedients are fruitless and a fatal result is anticipated if relief cannot be afforded. 4. In eclampsia abortion should only be induced as a last resort to save life. 5. In irreducible retroversion or retroflexion of the gravid uterus, but only where life is seriously threatened, not merely because the displacement is irreducible. 6. In severe hemorrhage. 7. In certain other diseases, where the complication of pregnancy is undoubtedly endangering life. The responsibility of inducing abortion should never be undertaken without a consultation.

MULTIPLE CUTANEOUS GANGRENE DUE TO CACHEXIA.—In 1878 Professor Simon first called attention to this comparatively rare disease, which for the most part affects children of various ages and has a malignant character. Dr. Eichhoff recently observed a case of this kind at the Breslau clinic for cutaneous and syphilitic diseases. The child, three years old, was first seen in April, and was then suffering from extensive eczema of the face, breast, and back. Constitutional symptoms were not marked at this time, and the eczema rapidly yielded to appropriate treatment. In May the child was again brought to the clinic, when its general health was found to be much depreciated. The back had been covered with dark-red patches, the largest about the size of a millet-seed. Vesicles soon appeared above these patches, but they rapidly collapsed, leaving ulcers, which soon became gangrenous. The sloughing extended deeply down into the subcutaneous connective tissue. Local and constitutional treatment caused these sloughing ulcers to heal with cicatrices resembling those of variola. Some time after this a corneal ulcer developed, and simultaneously with its appearance the head became affected with gangrenous ulcers. The latter slowly healed, leaving deep cicatrices. A second exacerbation occurred in June, and again a corneal ulcer was one of the complications. The ointment, applied locally, consisted of fifteen parts each of camphor and myrrh, with one hundred parts of vaseline.

The pathogenesis of this affection was said to resemble that of ordinary bed-sores. The appearance of the corneal ulcers was explained by the depreciation of the child's general health and insufficient *vis a tergo*.—*Deutsch. Med. Woch.*, August 21, 1880; *New York Medical Record*.

COMMUNICABILITY OF PUERPERAL FEVER BY THE MEDICAL ATTENDANT.—In a paper on this subject (*Brit. Med. Jour.*, 1880, p. 771) Dr. Macdonald concludes as follows. 1. The diligent and intelligent employment of antiseptic precautions and appliances, good ventilation, and extreme cleanliness are capable of diminishing very largely the occurrence of septicæmia, both in maternity hospitals and in private practice. 2. If antiseptics are carefully and systematically employed, there should be no case of the communication of the disorder from one patient to another by the medical attendant, even when he performs for the sick person all the duties that are incumbent upon him as a medical adviser. It is always, however, to be understood that the doctor restricts himself to his own duties and does not encroach upon those of the nurse, and that his measures to secure perfect antisepsis shall be thorough in all cases where there is the slightest suspicion of septicæmia. It follows also, if these views are correct, that the recommendation, so frequently given to an obstetrician, to leave his practice, in case he meets with puerperal fever, is both unnecessary and unsatisfactory, inasmuch as it tends to the neglect of the most reliable measures of safety,—namely, constant attention to cleanliness and thorough and complete disinfection,—whilst it puts upon the obstetrician a burden that is too heavy for him to bear, and which, indeed, is not borne by the very people who are loudest in recommending its necessity.

THE TEMPERATURE IN TUBERCULAR MENINGITIS.—Dr. Jules Turin (*Med. Times and Gaz.*, vol. i., 1881, p. 75; from *Jahrb. f. Kinderkr.*) sums up the question of temperature as follows. 1. Tubercular meningitis is always accompanied by a rise in temperature in one or other of its stages, but seldom during its entire duration. 2. In a few cases only does the disease begin with a sudden rise of the bodily heat, as in some forms of acute disease. 3. The thermometric results are extraordinarily variable, so that it is quite impossible to establish any typical temperature-curve. 4. In uncomplicated cases of tubercular meningitis the temperature rarely exceeds 102.2° F.; it generally varies between 100° F. and 102° F., but it may also sink some degrees below the normal. 5. The most common type is the remittent, with the usual day fluctuations. The variations within twenty-four hours are normal, or more than normal; sometimes they are very irregular, with more or less sudden rise or fall at any stage and at different periods in the twenty-four hours. 6. If the tubercular meningitis is the terminal of some previously-existing febrile disease,—as, for instance, a coxitis, or any bone or other joint lesion,—the average temperature will be higher than in other cases, but in other respects the course of the disease will be unaffected. 7. In the cases with acute general miliary tuberculosis the febrile exacerbations are more considerable and the variations more marked.

TREATMENT OF OZÆNA.—In several severe cases of chronic inflammation of the nasal and pharyngeal cavities giving rise to offensive discharge, Dr. Poore (*Lancet*, vol. i., 1881, p. 13) has found decided benefit result from the use of a stimulant and antiseptic snuff having the following formula: biborate of soda, nitrate of bismuth, of each one drachm; disulphate of quinine, ten grains; iodoform, five grains. This snuff has the effect of stopping the fetor and greatly diminishing the amount of discharge from the nostrils. It is liable, as are all snuffs when used for similar conditions, to cake in the nostrils, and it is therefore necessary to wash out the nostrils thoroughly once a day. This may be done with the nasal douche, or patients may be taught to snuff a lotion up the nose and allow it to run out of the mouth. A teaspoonful of glycerin of borax dissolved in a wineglassful of tepid water forms an excellent wash for the nose. When there is no bone trouble, sulphide of calcium in doses of half a grain (in pill) thrice daily often benefits the condition. It is often necessary to cleanse the nasal and pharyngeal cavities with a brush inserted through the anterior nares, and also behind the soft palate, so as to reach the summit of the pharynx. The brush may be moistened with glycerate of tannin, and, after the cavities have been cleansed, a little dry iodoform may be passed into the cavities on the tip of the brush.

UNUSUAL FORM OF TELANGIECTASIS.—Mr. Gay reports (*Lancet*, vol. i., 1881, p. 135) a case of telangiectasis occurring in a girl eight years old, which occupied the whole of the right cheek. It seemed to be a teratological development of the venous at the expense of the muscular elements, especially that of the buccinator muscle; for the muscular tissue had receded and disappeared before the growth of the tumor: so that the tumor bulged outward on the cheek very considerably, showing its blue color in patches through the skin, which was extremely thin. On the inner side of the cheek it also bulged as a closely-packed mass of large convoluted veins, which at length protruded so far as to incommode the child in talking and masticating, by getting between the teeth. From the cheek the growth extended in a broad and irregular band across the back of the mouth and the hard palate, the mucous membrane of the entire half of which was occupied by large veins exalting themselves considerably above the normal

level. Mr. Gay operated under ether with the red-hot needle, and gradually succeeded in eradicating the growth, piecemeal, almost entirely. The operations were accompanied by much hemorrhage.

SYPHILITIC AFFECTIONS OF THE LUNG.—Gamberini, of Bologna (*Brit. Med. Jour.*, 1881, p. 21), says that laryngeal lesions often precede or accompany syphilitic pulmonary affections. The symptoms of syphilis of the lung are generally those of pneumonic phthisis, from which during life there may be no certain means of distinguishing it; even after death the distinction cannot always be made between gumma and tubercle, especially when the gummy nodules are in a state of caseation or are infiltrated. It must be noted that syphiloma most usually spares the apex, whereas tubercle most frequently attacks that portion of the lung. This, however, is not constant, as has been shown by Fournier. The course of pulmonary syphilis is generally slow and apyretic, which is not usually the case in tubercular phthisis. Syphilis also is accustomed to attack only one lung, and one part of the lung. This tendency to localization is considered by the author to be a very important point in the diagnosis of pulmonary syphilis, whether the lung be attacked at an early or at a late stage of the disease.

## MISCELLANY.

INTERNATIONAL MEDICAL CONGRESS, LONDON, 1881.—Preparations for the approaching International Medical Congress are being vigorously pushed forward by the Executive Committee, and the arrangements are now beginning to take definite form.

The inaugural address, by Sir James Paget, the president-elect of the Congress, will be given in St. James's Great Hall, which has been already engaged for the purpose, on Wednesday morning, August 3. The following mornings will be devoted to the business of the various Sections, while the afternoons (with the exception of Saturday afternoon, which will be left free for garden-parties, excursions, etc.) will be occupied by the general meetings of the Congress, at which four addresses will be given by distinguished men of four nationalities. Three gentlemen have already promised to give these addresses:—Prof. Huxley, probably on "The Connection of General Science and Medicine;" Prof. Volkmann, of Halle, on "Modern Surgery;" and Dr. Billings, of Washington, on "Medical Literature:" the fourth address, to be given by a distinguished Frenchman, has not as yet been finally arranged. The meetings of the various Sections will be held in rooms at Burlington House, courteously placed at the disposal of the Committee by the University of London, the various learned societies, and the Royal Academy of Arts. This, however, not providing the required amount of accommodation, the Committee have engaged Willis's Rooms for the occasion, and four of the Sections will hold their meetings there. As stated in an earlier notice, no less than forty thousand individual medical men in various parts of the world received the original circular of invitation during August and September of last year, and since then the secretaries of the various Sections have been actively engaged in circulating provisional lists of subjects which seemed in the opinion of the committees of the Sections those best suited for discussions and papers. Numerous replies have been received in answer to the communications, in some cases leading to alterations in the subjects selected. These amended programmes have again been distributed among those most likely to take interest in them, and are now combined into a pamphlet, and are issued, together with the rules of the Congress, printed in the three official languages, to any medical man making application for them to the secretary-general. Since the list of names published in November last, a large number of our foreign colleagues have definitely announced that they will come to the meeting, and there seems every prospect of the attendance from abroad being a full one: meanwhile, depending on the number of names appearing as officially connected with the Congress, and in the subscription-list, together with the number of gentlemen from abroad who have positively stated their intention to attend, a certain estimate of one thousand members may be made, and it seems not unreasonable to assume that at least double that number will attend.

The Reception Committee are busily engaged, and have decided upon giving an evening reception at South Kensington, and perhaps a second in the Albert Hall. The Lord Mayor purposes entertaining members of the Congress at dinner at the Mansion-House on August 4.

COMMENCEMENTS OF THE MEDICAL COLLEGES OF PHILADELPHIA.—The Fifty-Fifth Commencement of the Jefferson College was held on March 12, 205 men graduating. The names of the prize-men were Henry Dickson Bruns, John Ellegood, S. Howard Wilson, J. Charles Martin, Edward Winslow Taylor, L. L. Artis, A. J. Dodds, George W. Stout, and L. L. Rogers. Professor Bartholow delivered the valedictory.

The One-Hundred-and-Fifteenth Commencement of the University of Pennsylvania was held on March 15, 115 men taking the degree of Doctor of Medicine and 47 that of Doctor of Dental Surgery. The prize- and honor-men were George E. De Schweinitz, J. P. Crozer-Griffith, Orlando C. Robinson, Louis J. Lautenbach, Thomas D. Dunn, Guy Hinsdale, Eugene H. Dickenshied, Joseph B. Scott, John B. Gibbs, John J. Buchanan, Moyses Marcondes, and Louis D. Brose, the

honor-men including only those who received a higher average than 95. The valedictory was pronounced by Professor H. C. Wood.

The Commencement of the Woman's Medical College was held on March 17, 19 women graduating. Professor Rachel Bodley delivered the valedictory, in the course of which she stated that 276 women had graduated from the school, of whom 150 are at present in practice. The average annual income of the graduates is $2907; 12 make over $5000 and 4 over $15,000. This statement ought to bring recruits to the college benches.

GENEROUS DONATIONS TO MEDICAL OBJECTS.—It is stated that Honorable Thomas A. Scott has presented $50,000 each to the University and Jefferson Medical College and $30,000 to the Orthopædic Hospital. The trustees of the University design using their donation for the purpose of endowing the chair of Mathematics; but the authorities of the Jefferson College, we suppose, intend to endow one of the medical professorships.

THE thirty-second annual session of the American Medical Association will be held in Richmond, Virginia, on Tuesday, Wednesday, Thursday, and Friday, May 3, 4, 5, 6, 1881, commencing on Tuesday at 11 A.M.

STATISTICS OF CANCER OF THE BREAST.—Vienna statistics show 366 out of 30,000, or one per cent., of female bodies examined post mortem, to present cancer of the breast. In 184 cases that had been operated upon, there were 105 in which metastases had occurred. These were absent in only 41 out of 182 that had not been operated upon. Metastatic secondary cancer occurred most frequently in the lymphatic glands (192), in the respiratory organs (132), and in the digestive organs (139), of which 127 occurred in the liver.—*Med. Times and Gaz.*, vol. i., 1881, p. 48; from *Centralbl. f. Chir.*

READY METHOD FOR HOT FOMENTATIONS.—Place the flannels in the steamer of an ordinary potato steam-kettle. They readily become permeated with the steam when the kettle is placed on the fire, and can be readily changed without any fear of scalded fingers during the attempt to wring them sufficiently dry, as in the ordinary method.—*British Medical Journal.*

MR. STEPHEN JENNER, grand-nephew of the discoverer of vaccination, and himself in childhood the subject of many of his uncle's experiments, is living at the age of eighty-eight, in great poverty, at Heathfield, near Berkeley, England.

A FRENCH TRANSLATION OF DUHRING ON THE SKIN.—We learn that Professor Fournier, of the St. Louis Hospital, has requested permission, on behalf of a former pupil, to translate Professor Duhring's treatise on skin diseases, with notes, for the French practitioner.

THE Professorship of Dermatology in the University of Vienna, made vacant by the death of Hebra, is being contested for by Professors Kaposi, Auspitz, and Neumann, of whom the first is the son-in-law of the late professor and was associated with him in the production of his great work on diseases of the skin. It was at first announced that Kaposi would be chosen without a contest.

CHILBLAINS.—Mr. W. Squire (*Brit. Med. Jour.*, vol. i., 1881, p. 181) says he has found all the vaunted external remedies for chilblains fail in his hands, and he recommends opium, with a little Epsom salt and syrup of ginger, night and morning. The relief is usually rapid.

THE Surgical Society of Paris has awarded the Duval prize to M. Paul. Segond, Prosector in the Faculty, for his work on "Acute Abscesses of the Prostate," and has equally divided the Laborie prize between M. L. H. Petit, for his essay on "Palliative Operations in Cancerous Subjects," and M. A. Heatherbe, for his work on "Calcified Epithelioma."

THE West Virginia Legislature has passed a bill creating a State Board of Health.

## OFFICIAL LIST

*OF CHANGES OF STATIONS AND DUTIES OF OFFICERS OF THE MEDICAL DEPARTMENT U.S. ARMY FROM MARCH 6 TO MARCH 19, 1881.*

WHITE, C. B., MAJOR AND SURGEON.—Granted leave of absence for three months on Surgeon's certificate of disability. S. O. 57, A. G. O., March 11, 1881.

BROWN, H. E., CAPTAIN AND ASSISTANT-SURGEON.—Relieved from duty at Fort Duncan, Texas, to accompany battalion First Infantry to Fort Davis, Texas, and, on arrival there, report to the Commanding Officer for duty as Post-Surgeon. S. O. 35, Department of Texas, February 26, 1881.

GIRARD, J. B., CAPTAIN AND ASSISTANT-SURGEON.—Having reported in person, is assigned to duty at Fort Verde, A.T. S. O. 23, Department of Arizona, February 26, 1881.

TAYLOR, B. D., CAPTAIN AND ASSISTANT-SURGEON (now in San Antonio).—To report to the Commanding Officer, Fort Ringgold, Texas, for duty as Post Surgeon. S. O. 40, Department of Texas, March 7, 1881.

GARDINER, J. DE B. W., CAPTAIN AND ASSISTANT-SURGEON.—The leave of absence granted him in S. O. 16, February 8, 1881, Department of Arizona, is extended five months, and so much of S. O. 34, c. s., A. G. O., as relates to him is revoked. At the expiration of his present leave of absence, to report by letter to the Surgeon-General. S. O. 59, A. G. O., March 14, 1881.

GIBSON, R. J., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Granted leave of absence for one month, and permission to apply for fourteen days' extension. S. O. 47, Department of the Missouri, March 10, 1881.

ARTHUR, WILLIAM H., FIRST-LIEUTENANT AND ASSISTANT-SURGEON (recently appointed).—To report in person to the Commanding General, Department of the Platte, for assignment to duty. S. O. 62, A. G. O., March 17, 1881.

BUSHNELL, GEORGE E., FIRST-LIEUTENANT AND ASSISTANT-SURGEON (recently appointed).—To report in person to the Commanding General, Department of Dakota, for assignment to duty. S. O. 62, c. s., A. G. O.

BIRMINGHAM, H. P., FIRST-LIEUTENANT AND ASSISTANT-SURGEON (recently appointed).—To report in person to the Commanding General, Department of the Missouri, for assignment to duty. S. O. 62, c. s., A. G. O.

WYETH, M. C., FIRST-LIEUTENANT AND ASSISTANT-SURGEON (recently appointed).—To report in person to the Commanding General, Department of Dakota, for assignment to duty. S. O. 62, c. s., A. G. O.